

Non-Technical Summary (NTS)

**SUEZ Wind Energy BOO Wind Power
Plant 1.1 GW – SWE North (PLOT 2)**

8 October 2024

DRAFT

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EcoConServ
ENVIRONMENTAL SOLUTIONS



ECO
Consult

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RCREEE

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1. INTRODUCTION

1.1 Goals and Objectives

The energy sector is a key driver for the socio-economic development of Egypt, representing around 13% of current GDP and thus making economic growth in the country contingent upon the security and stability of energy supply. To align and reinforce the sector with sustainable development, the Arab Republic of Egypt (through the Ministry of Electricity and Renewable Energy) had developed and adopted the Integrated Sustainable Energy Strategy (ISES) 2015 – 2035, which provides an ambitious plan to increase the contribution of renewable energy to 42% of the country's electricity mix by 2030, of which wind power is a key component, to be developed mostly in the Gulf of Suez (GoS) due to the wind characteristics in the area.

As a result, the GoE issued the Renewable Energy Law (Decree Law 203/2014) to support the creation of a favorable economic environment for a significant increase in renewable energy investment in the country and establishes the legal basis for the Build, Own and Operate (BOO) framework. Through the BOO mechanism, the Egyptian Electricity Transmission Company (EETC) invites private investors to submit their offers for solar and wind development projects, for specific capacities and the award is to be made to that bidder with the lowest Kilowatt Hour (kWh) price. In addition, the GoE (through the New and Renewable Energy Authority (NREA)) provides the land for the investors.

In accordance with the Law above, a consortium composed of ACWA Power and Hassan Allam Utilities B.V (hereafter referred to as the '**Developer**') is proceeding with developing a new wind power plant project (Suez Wind Energy – (SWE)) with a capacity of 1,100MW under the BOO scheme. SWE is to be developed over two (2) Plots – the first located within the northern parts of the Gulf of Suez (hereafter referred to as '**Plot 1**') and the second located within the southern parts of the Gulf of Suez (hereafter referred to as '**Plot 2**').

The Regional Centre for Renewable Energy and Energy Efficiency (RCREEE) is managing the Environmental and Social (E&S) process for the Project development on behalf of the Developer. RCREEE commissioned the consortium consisting of EcoConServ, ECO Consult and Safe Soar (hereafter referred to as the '**ESIA Consultant**') to carry out an Environmental and Social Impact Assessment (ESIA) for the Project.

As noted earlier, the above 1,100MW Project will be developed over two (2) plots. Given the geographical distance between the plots, from an environmental and social perspective, separate ESIA studies will be undertaken for each plot. This report represents the ESIA Non-Technical Summary (NTS) for the Plot 2 / SWE North ESIA.

2. PROJECT DESCRIPTION

2.1 Project Setting

The Project is located in the Red Sea Governorate of Egypt, around 290 km to the southeast of the capital city of Cairo. More specifically, the Project is located near the Red Sea shoreline and within the Ras Gharib District of the Red Sea Governorate, where the closest residential areas include Wadi Dara Village (located 0.9 km to the west) refer to the figures below.

The Project is located within the NREA Concessionary Area, a 656 km² for which an Environmental Social and Impact Assessment was undertaken in 2007 to determine the potential environmental impacts of wind power development. The NREA Concessionary Area is to host the development of wind power amounting to 3,000 MW. The corresponding EIA informing the NREA Concessionary Area on impacts of wind turbine development identifies site-specific environmental and social constraints to be taken into account by the Project developer throughout the planning and design phase of the Project in accordance with the three 'zones' of the NREA Concessionary Area and aligned with anticipated environmental impact among competing environmental interests: renewable energy development and conservation, particularly avi-fauna populations. The area starts about 20 km in the south of Ras Gharib and reaching up to the Gulf of Zayt (about 60 km in the North of Hurghada). The wind power target capacity for the area is between 2,000 – 3,000 MW by 2026/2027.



Figure 1: Project Site in Relation to the Capital City of Egypt



Figure 2: Project Site and Closest Villages

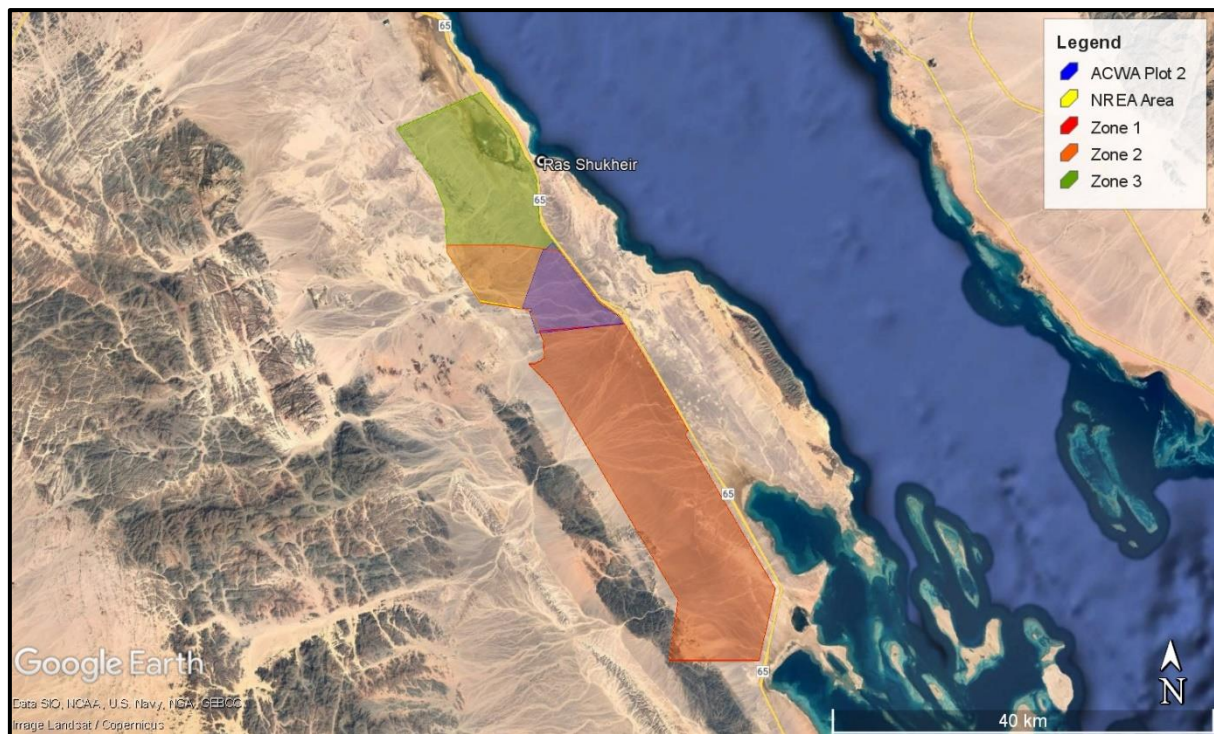


Figure 3: NREA Concessionary Area's 3 Zones with the Project site overlain in Zone 2

The Project site is located within the Ras Gharib City (or District) and therefore administratively is under the Ras Gharib City Council. The Ras Gharib District is further divided into Ras Gharib town as well as 2 rural (village) local units (Zaafarana and Wadi Dara). The closest community settlement to the Project site is Ras Gharib city (located 37.7 km to the northeast).

Ras Gharib City is the second-largest city in the Red Sea Governorate, and the most important Egyptian city in terms of oil production.

Table 1: Project Site Coordinates

Project Boundary Coordinates		
Point	Latitude	Longitude
1	28.052828°	33.252076°
2	28.050188°	33.276469°
3	28.003485°	33.316218°
4	27.991080°	33.338052°
5	27.984591°	33.341722°
6	27.975285°	33.250200°
7	27.998702°	33.241345°
8	28.000215°	33.230187°

2.2 Project Components

Wind turbine technology relies on harvesting the kinetic energy in wind (i.e. movement of wind) and turning it into mechanical energy which in turn is used for electricity generation. The key components of the Project include the following:

- Wind Turbines: a typical wind turbine is presented in the figure below. For this Project there are to be 69 wind turbines occupying the project site for a capacity of 8.0 MW, respectively. The turbines under either possibility will have a hub height of 100 m and a rotor diameter of 171 m, respectively.
- Supporting infrastructure and utility elements for the Project which will include:
 - Cables that will connect the turbines to an onsite substation
 - Substation that converts the output from the turbines to a voltage that is appropriate for connection with the National Grid
 - Onsite building infrastructure that will include an administrative building (offices) and a warehouse for storage of equipment and machinery
 - Road network for ease of access of various project components throughout the site
- Associated facilities which will mainly include an Overhead Transmission Line (OHTL) that will connect from the substation onsite to the National Grid. Additional details on this is provided in Section 7.

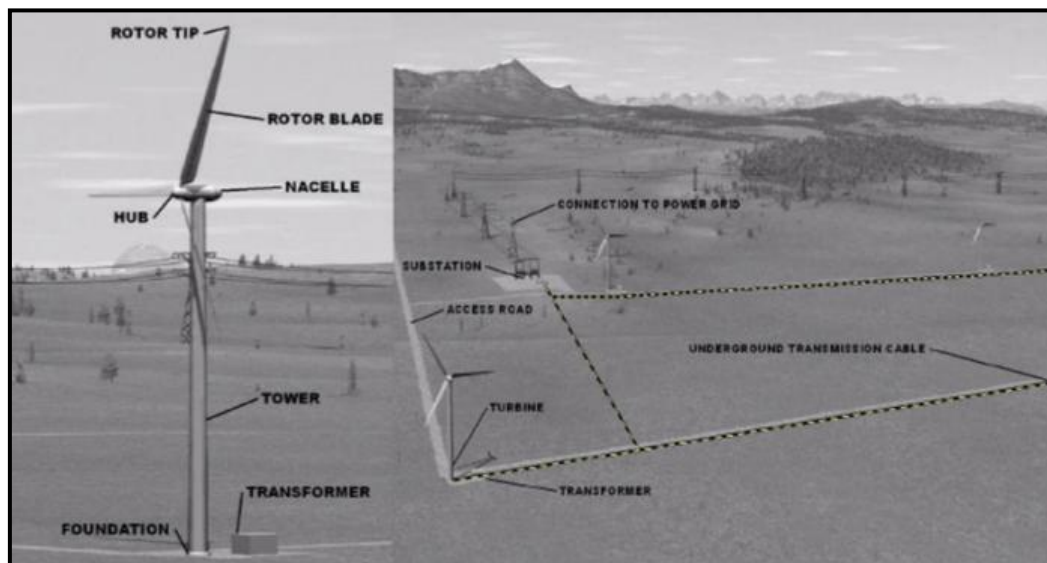


Figure 4: (a) Typical Structural Components of a Wind Turbine, (b) Typical Components of a Wind Farm

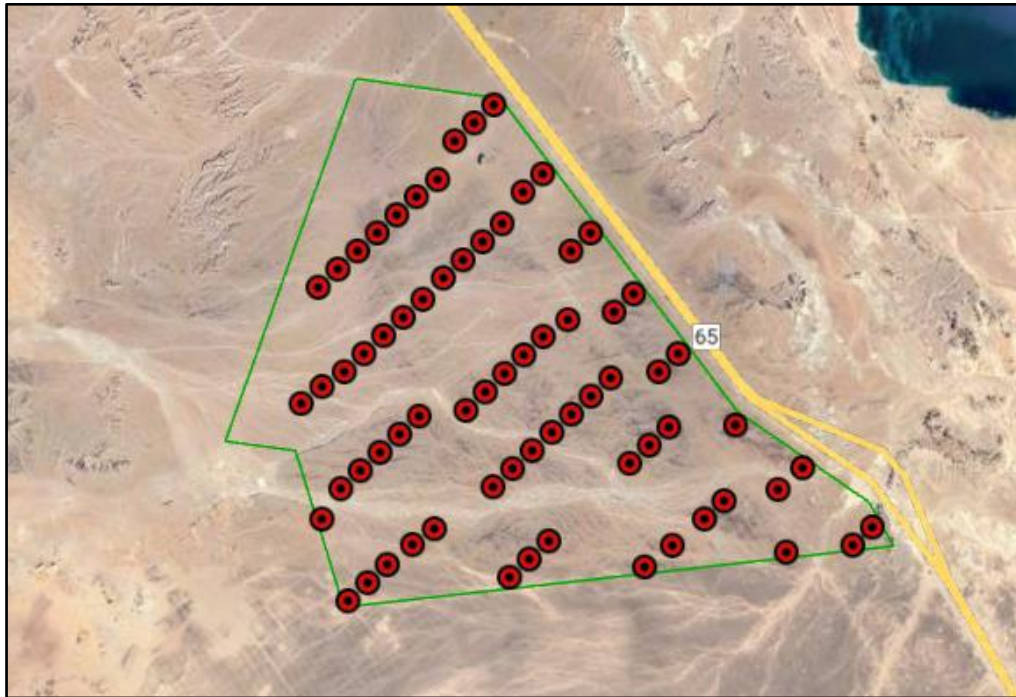


Figure 5: Project Site Turbine Layout

2.3 Project Phases

The Project will include 3 distinctive phases as follows:

- Design and Construction Phase that will include: (i) preparation of the detailed design, (ii) transportation of components to the site, (iii) site preparation activities (land clearing, excavations, etc.), and (iv) installation of components.
- Operation Phase that will include the normal daily operation of the wind farm and the undertaking of maintenance activities as required.
- Decommissioning Phase that will include the dismantling of the various Project components at the end of the life time.

According to the current timeline, construction of the Project is anticipated to commence approximately Q4 of 2024 and will require approximately 24 months for construction and commissioning (i.e. Q3 of 2026). Operation of the Project is therefore anticipated to commence in late 2026 (Q4) for a period of 25 years.

2.4 Analysis of Alternatives

2.4.1 Site Selection Alternatives

The Government of Egypt, through Prime Ministerial Decree No. (37/4/15/14) of 2015, allocated land to the New and Renewable Energy Authority (NREA) for renewable energy projects via usufruct rights. This land, proposed by the National Centre for Land-use Planning and approved by the Council of Ministers, totals about 7,600 km² in regions such as the Gulf of Suez (GoS), east and west of the Nile, Benban, and Kom Ombo. Approximately 5,700 km² (75%) is designated for wind projects, while 1,900 km² (25%) is for solar energy projects. Specifically, the GoS has 1,220 km² allocated for wind power, capable of producing 3,550 MW.

Currently, around 300 km² of this area is being developed for multiple wind farms. Key factors for selecting this area include government ownership, minimal competing uses, high wind power potential, vast desert terrain, favorable geomorphology, and easy access requiring limited road construction. Based on the above, NREA

granted the Developer full access rights to the specific Project for the development of a 1.1 GW Wind Farm Project, comprised of two plots (one north of Rasghare, and the other – Plot Two – south of the city). Therefore, taking the above into account, there are no site alternatives that were considered by the Developer in this case.

2.4.1 Technology Alternatives

Renewable Energy Development Projects

Egypt's energy strategy, ISES 2015-2035, aims to increase renewable energy's contribution to 20% of electricity by 2022 through hydro, wind, and solar power. Egypt's strong solar radiation supports solar projects in areas like Kom Ombo, West Nile, Hurghada, Zaafarana, and Benban. Hydropower resources are concentrated in Aswan, where several power stations are located. The Gulf of Suez, with its high, stable wind speeds of 8-10 m/s and large uninhabited areas, is ideal for wind power. Therefore, as discussed earlier, the GoE has allocated to the NREA through Prime Ministerial Decree No. (37/4/15/14) of 2015 an area of 1,220km² in the GoS for wind development projects.

Thermal Power Plants

Conventional thermal power plants are another option but come with significant environmental drawbacks, such as higher water consumption and greater air pollution. These impacts are more severe compared to renewable energy projects. Additionally, thermal plants do not align with the ISES 2015-2035 goal of diversifying energy resources and increasing renewable energy's share to 20% by 2022.

2.4.2 Design Alternatives

As discussed earlier, currently an area of around 300km² in the GoS is being developed for multiple wind farm projects. NREA has granted the Developer full access rights to the specific Project for the development of a 1.1 GW Wind Farm Project, a portion of which is to be implemented within the NREA Concessionary Area as well as the Gebel El Zeit Important Bird Area (IBA).

NREA Concessionary Area

Among the objectives of this ESIA is to build on the outcomes of the Environmental Impact Assessment study (2007) undertaken to determine the potential environmental impacts of wind power development in the 656 km² NREA Concessionary Area, which is to be utilized for the development of wind power amounting to 3,000 MW. The corresponding EIA informing the NREA Concessionary Area on impacts of wind turbine development identifies site-specific E&S constraints to be taken into account by the Project developer throughout the planning and design phase of the Project.

The NREA Concessionary Area was zoned according to the weight of the expected environmental impact among competing environmental interests: renewable energy development and conservation, particularly avi-fauna populations. The area starts about 20 km in the south of Ras Gharib and reaching up to the Gulf of Zayt (about 60 km in the North of Hurghada). The wind power target capacity for the area is between 2,000 – 3,000 MW by 2026/2027.

The following environmental surveys were carried out for the “NREA concession area”:

- Reconnaissance survey to assess the present land use in the area
- A survey on the fauna (others than avifauna) and flora
- An autumn and spring monitoring of bird migration and bird habitat
- A geological survey

The assessments evaluated the possibility of environmental impacts brought on by the development and operation of wind farm development in the NREA Concession Area and its corresponding Feasibility Study for a Large Wind Farm at Gulf of Zayt (DECON, 2007). The results of the assessments affirmed that, overall, environmental and social impacts would be negligible due to the remoteness of the area, lack of residences and native ecosystems. However, concerning risks posed to migrating avi-fauna, they (perceived potential impacts) were determined to be significant.

In order to find a middle ground within the NREA Concessionary Area between the area's exceptionally high wind power potential and the land's inherent significance to the migration flyway for avifauna, three zones were defined to elaborate on requirements for development:

- **Zone 1:** While this zone comprises nearly 60 % of the Concessional Area, wind park construction is banned.
- **Zone 2:** Wind Park development is permitted yet subject to further ornithological monitoring and verification. Based on the results of the ornithological monitoring and verification exercise, the proposing wind farm initiative may be permitted.
- **Zone 3:** Any wind farm installation in this zone would require technical avoidance and mitigation measures exemplary of the best practicable standard. A post-installation monitoring programme would need to be executed to assess the impacts of the wind park and whether additional measures are required.

Plot 2 is situated within Zone 2 (Figure 6).

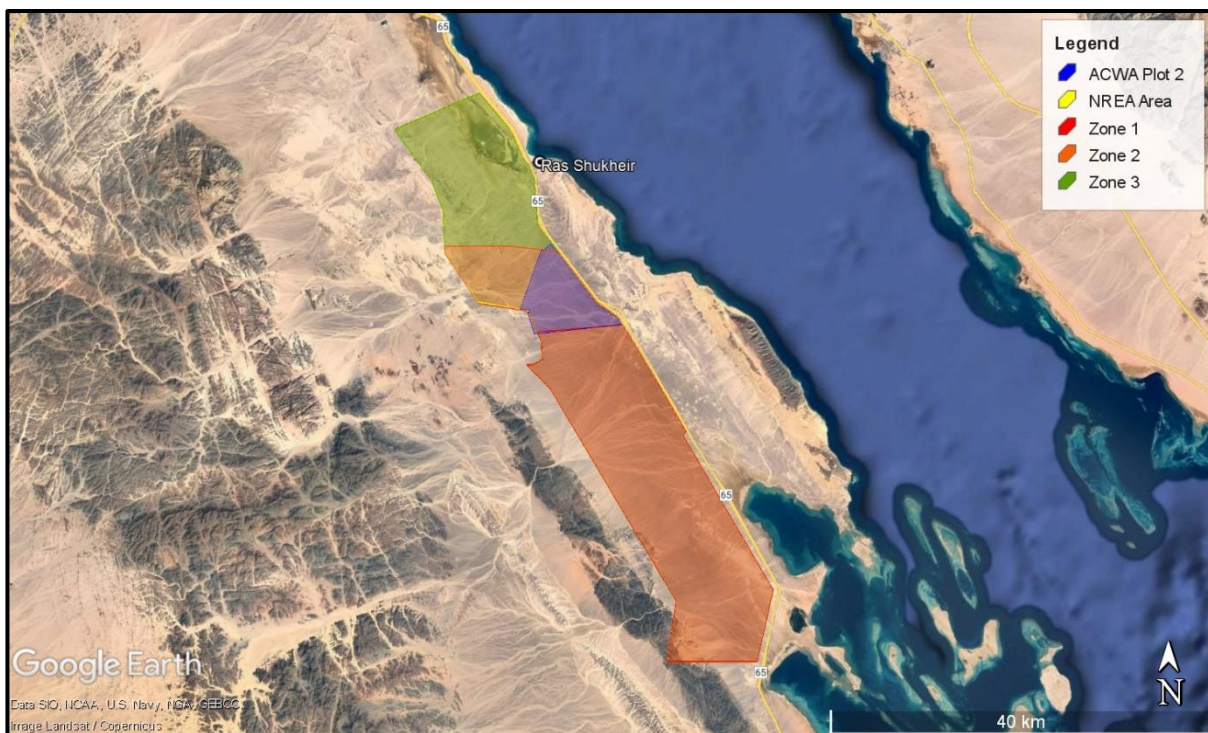


Figure 6: NREA Concessionary Area's 3 Zones with the Project site overlain in Zone 2

Table 2: Summary Outcomes of NREA's Feasibility Study for a Large Wind Farm in the Gulf of El Zayt (2008)

E&S Attributes	Outcomes of Strategic ESIA	Additional Requirements in Strategic ESIA
Landscape and Visual	No concerns reported as the landscape is sparse (desert plains) of sensitive receptors as well as ecological elements.	No additional requirements to be considered
Landscape and Use	Area is mostly desert landscape (compacted gravel or rocky) and not ecologically sensitive. Very little deterioration expected.	Site-specific mitigation and housekeeping procedures.

E&S Attributes	Outcomes of Strategic ESIA	Additional Requirements in Strategic ESIA
Geology, Hydrology, Hydrogeology	Negligible impacts on groundwater and surface water. A minimum distance of 150 m from wind turbines to existing groundwater wells of the Ras Shukheir water supply is required. Within the NREA Concession area, there are plans to construct service buildings, such as store, control and apartment buildings, of which will be connected to the existing water pipeline and equipped with an appropriate waste water treatment system (e.g. septic tank with underground seepage and regular sludge collection).	Turbines should be installed at a distance of 150 m from existing groundwater wells of Ras Shukheir water supply.
Biodiversity	No serious impacts on biodiversity anticipated. The landscape is sparse in vegetation. Animals that were recorded are not included in the Red List of Threatened Species, both internationally or nationally.	Site-specific mitigation and monitoring requirement.
Birds (avi-fauna)	As the NREA area is located next to a registered Important Bird Area (IBA), the Gabal el Zayt IBA area, and near or partially in a major flyway area of migrating birds, impacts of wind power utilization on migrating birds were likely to be significant. The disturbance on the flyway against the heavy wind during spring were determined to be critical.	Regarding Zone 2, in which the Project area is defined, wind farm installation is subject to further ornithological study in order to commence.
Archaeology and Cultural Heritage	None reported	Precautionary Principle to be applied and coordination with the Ministry of Antiquities
Air Quality and Noise	Some additional dust will occur locally during construction works; however, it is not anticipated to be critical due to the absence of population or wildlife, that would otherwise be affected. Similarly for noise, the closest sensitive receptors reported are in Wadi Dara. The noise emissions from wind turbines were significantly below 30 Decibel.	Site-specific mitigation and monitoring requirement.
Infrastructure and Utilities	Water supply: Wind farms' water requirement not to affect the overall water supply in the region Transport: Wind power development is not anticipated to cause traffic bottlenecks in the greater area	Domestic waste water originating from the construction yard facilities or permanently constructed service buildings shall undergo simplified treatment (septic tank) and infiltrated to the sandy underground for further natural treatment. Site-specific mitigation (waste gathering and proper disposal) and monitoring requirement. A co-operation with the Rhas Gharib waste collection system is recommended.

E&S Attributes	Outcomes of Strategic ESIA	Additional Requirements in Strategic ESIA
		Turbines shall not be installed in wadis. The wind park internal grid shall be made by underground cables. Any wind park, which would be erected on the NREA area, shall be connected to a substation to be built by EEHC/ETC. The interconnections shall be either by underground cable or built according to accepted bird protection guidelines
Occupational Health and Safety	General risks associated to persons involved in construction, operation and decommissioning of wind farms.	Adhering to international standards of health and safety guidelines.
Socio-economics	Few people reside in the immediate surrounding of the NREA area, who may be affected by wind power development. Windpark construction will create employment.	No additional requirements to be considered

Overall, the following mitigation measures are strongly recommended as part of the EIA Study of the NREA Concessionary Area pertaining to the mitigation of wind turbines' potential impact on avi-fauna:

- Avoid wind turbines with a maximum height of more than about 100m, because the majority of birds migrate well above 100m
- Avoid turbines with lattice towers in order to reduce suitable perching sites.
- Avoid lighting of turbines. If lighting of turbines is absolutely required, use the minimum number of intermittent flashing white lights of lowest effective intensity
- Paint turbine blades to increase blade visibility according to HODOS (2003): a single, solid blackblade or a single blade with thin stripe patterns paired with two white blades.
- Avoid small turbines with high-speed rotors and with turbines closely packed together.
- Maintain a corridor aligned with main flight directions (south-southeast in autumn and north-northwest in spring) with a breadth of more than 1 km between wind farms at reasonable distances.
- Implement a detailed post-construction monitoring programme in order to:
 - Verify the assumptions gathered within the impact assessment and determine significant deviations from predicted impacts;
 - Determine the weight and significance of proposed impacts (especially collision rate);
 - Examine behavior of migrating birds in the vicinity of the proposed wind power plant;
 - Examine the conditions in which collisions occur and the cause-and-effect chain of collisions;
 - Test the effectiveness of mitigation measures;
 - (if so) identify critical wind turbines;
 - (if necessary) maintain further mitigation measures (acoustical deterrents, temporal shutdown of critical turbines);

- (if necessary) remove problem turbines associated with unacceptable mortality

NOTE: all of the above requirements have been considered within this ESIA as applicable. However, for requirement: (i) are outdated (e.g. requirement related to maximum top height of 100m where the GoE not allow developments up to 220m) or (ii) will be updated based on the updated environmental permit that will be issued by EEAA for this project (e.g. maintaining a 1km corridor)

2.4.1 No-Project Alternative

The 'no Project' alternative assumes the site remains a vast desert with sparse vegetation. Without the Project, negative environmental impacts outlined in the ESIA would be avoided. However, these impacts are generally minor and manageable through the Environmental and Social Management Plan (ESMP). The Project's absence would forfeit significant benefits, including promoting sustainable development, enhancing energy security, reducing greenhouse gas emissions, and generating local employment. Overall, the ESIA concludes that the substantial positive economic and environmental impacts of the Project outweigh the negative impacts, making the 'no Project' alternative less favorable.

2.5 Environmental & Social Baseline Conditions

2.5.1 Landscape and Visual

Visual impacts associated with wind energy projects typically concern the turbines themselves (e.g. colour, height, and number of turbines) and impacts relating to their interaction with the character of the surrounding landscape and the visual receptor which might be present.

Turbines are tall structures (185 for this Project) that can be seen from several kilometres away and impose a change on the landscape of the area where they are installed. However, visual impacts depend on several factors such as distance, size, visibility, landscape and geography, and the presence of potential sensitive visual receptors.

Nevertheless, visual impacts created from the development of the Project are not considered an issue of concern due to the following:

Potential sensitive receptors are located in Wadi Dara Village - 0.9km from the Project. However, Wadi Dara Village does not have a large permanent community with majority of population being workers and guards employed at the various poultry, livestock and agricultural farms within the settlement (mainly at a rotational basis). Based on this, aesthetical value for such a receptor loses some importance. Finally, based on consultations undertaken with Wadi Dara such impacts were explained but no issues were raised.

The rotating blades will be visible from vehicles passing across the Hurghada - Cairo Highway as well as the main road leading into Wadi Dara Village which also intersects the Project Site. The turbines can attract visual attention and potentially distract drivers passing along the highway.

Project area is considered a barren and desert area and in general is located within an industrial area with petroleum activities for which its aesthetical value loses some importance.

There are several existing and under construction wind farm developments in the area as well as several electricity distribution and transmission lines so the addition of this Project will not be a significant impact to the visual and landscape characteristics of the area.

2.5.2 Land Use & Infrastructure

As mentioned earlier, the Project site is located within the NREA Concession Area, an area that is overall carved into three zones (Zones 1 – 3) prescribing varying restrictions and or recommendations on development. The Project site lies within Zone 2 within which require ornithological monitoring and verification prior to permitting wind farm development.

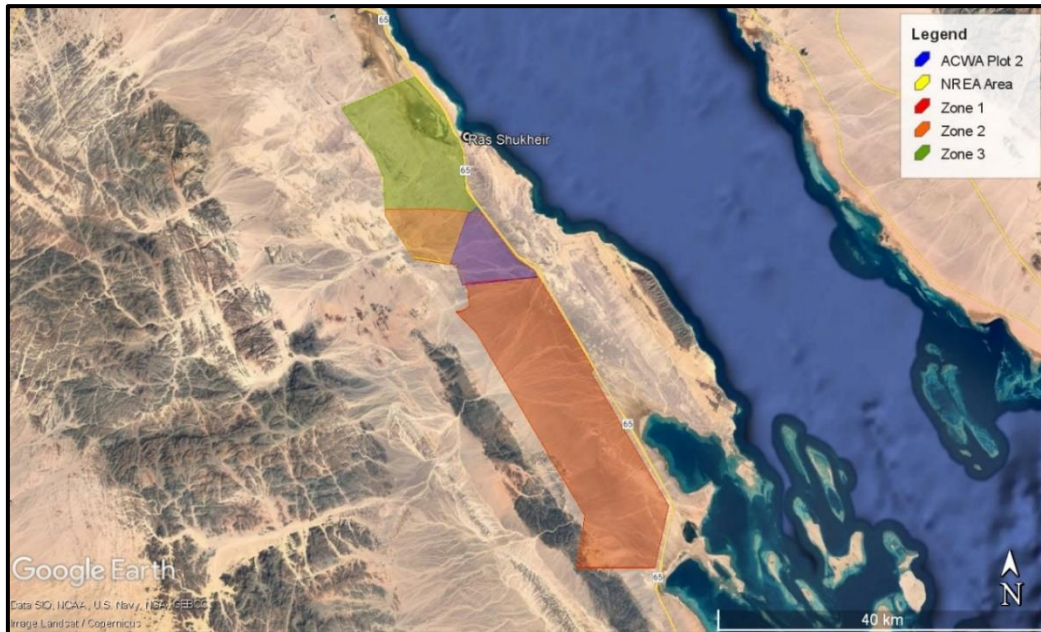


Figure 7: NREA Concessionary Area's 3 Zones with the Project site overlain in Zone 2

The Project site is also adjacent to Wadi Dara Village, entailing several receptors that are also near the project site with part-time residence (with one abandoned receptor recorded in the Project site and is to be removed). The land use survey identified characteristics of land use in Wadi Dara Village which namely includes agricultural activities (businesses) and part-time residences.

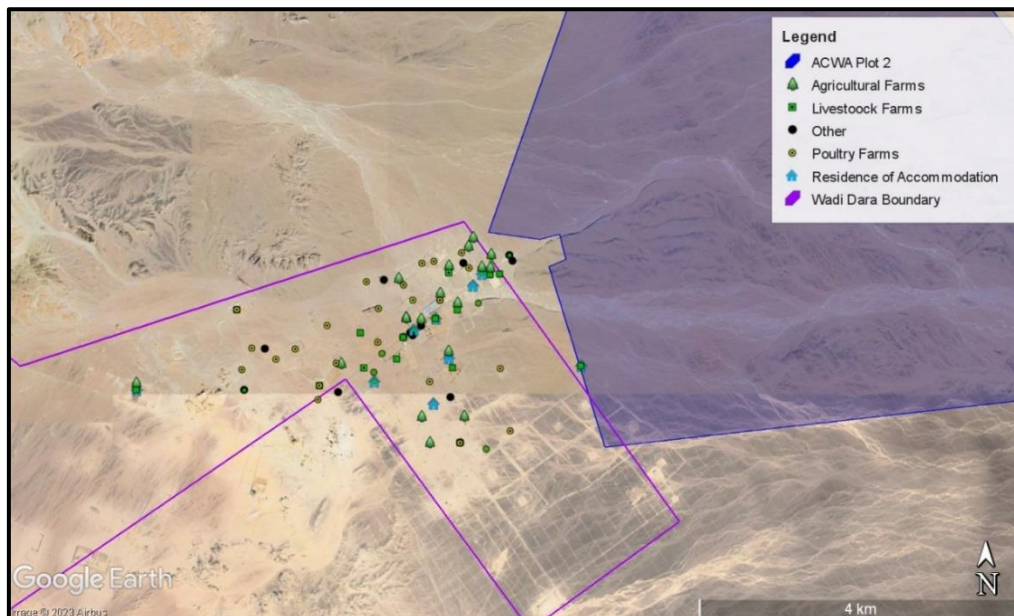


Figure 8: Land Use Survey for Wadi Dara

Additionally, the Wadi Dara Cooperative Association for Agricultural Remediation, which manages agricultural development and, in recent years, has implemented an activity to allocate lands to private sector investors. It was found that 0.1 km² of the NREA Concession area and Project site had been allocated under the Wadi Dara Cooperative's program. Following consultations, the area was ceded back to NREA and alternative lands, located

on the western-side of Wadi Dara Village, of similar composition land has been allocated to the Cooperative by the Red Sea Governorate.

Within the Project site, there are indications of limited development including the landscaping (on the lands that were being managed by the Cooperative) and a former dumpsite, which at the time of the land-use survey, had indications of use such as recently disposed chicken carcasses. It's since been affirmed that the dumpsite is officially in disuse.

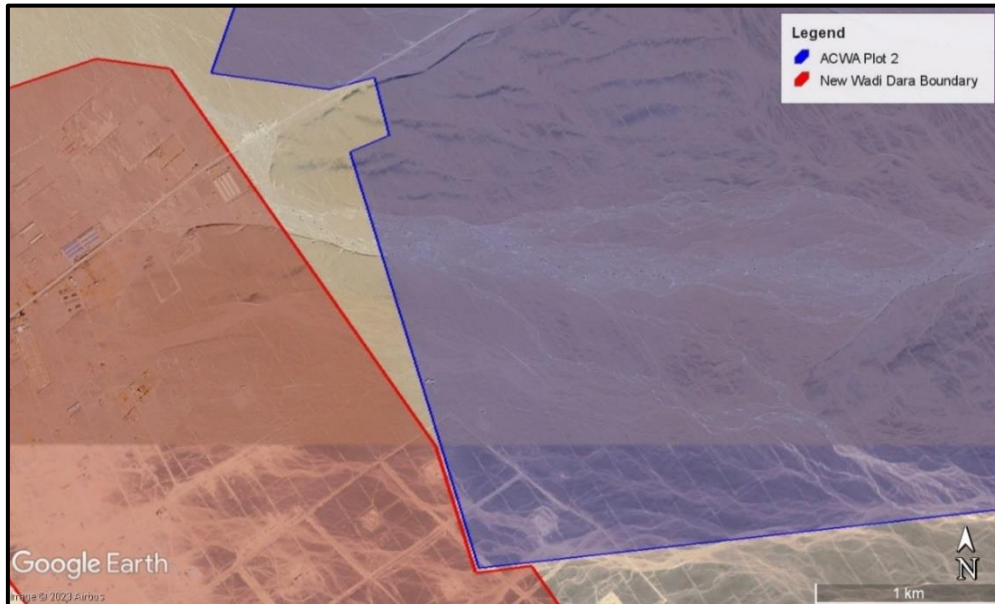


Figure 9: New Wadi Dara Boundary and Project Site

Gebel El Zeit is designated as both an IBA and a KBA (with concurrent boundaries) and the project area lies within the protected site. The site consists of a narrow, 100km long strip extending along the Gulf of Suez and Red Sea Coast.

A detailed land use survey was undertaken for the Project site to understand any informal land use activities undertaken such as physical activities (houses, structures, etc.) or economical activities (such as grazing, agricultural, etc.). It is important to note that area of the Project site is under the “Ghafra System” of Bedouin Groups (although they have no physical or economical activities within the site), which entails involving such Bedouin groups in the Project (through jobs, services, etc.) for their support. In particular, the key Bedouin Groups known in the area are the Tabbna and the Hamadin families. As per consultations, the ESIA team confirmed that there are no stable Bedouin communities in nor near the Project site (neither temporary nor permanent).

2.5.3 Hydrology and Hydrogeology (Soil and Groundwater)

The project site is located in an area of wadi deposits, surrounded by local moderately to low productive aquifers with insignificant surface and limited sub-surface recharges. Surface water hydrology in the area of the project concerned mainly about the accumulation of rainwater in the watershed areas of dray wadies and the nature of flow along the main streams of them.

The height of the of the terrace above the ground level (the level of the following terrace) varies from 0.5 m to about 2 m at the west while it varies from 1 m to about 3 m at the west and southwest. This terrace composed of very coarse chert nodules, cobbles and boulders of granite, basalt, impeded in fine clay and sand. These wadi elevations.

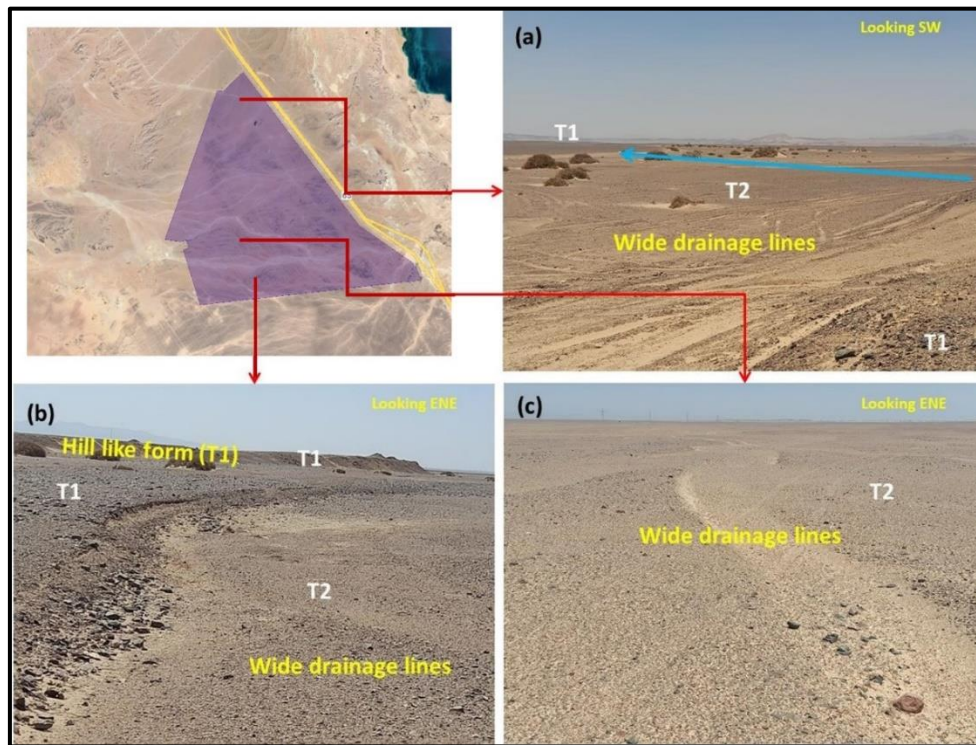


Figure 10: Field photographs of the terraces T1, T2. Note the shallow and very wide drainage lines crossing the T1 and floored by T2 (b) and the hill like form of T2 (b).

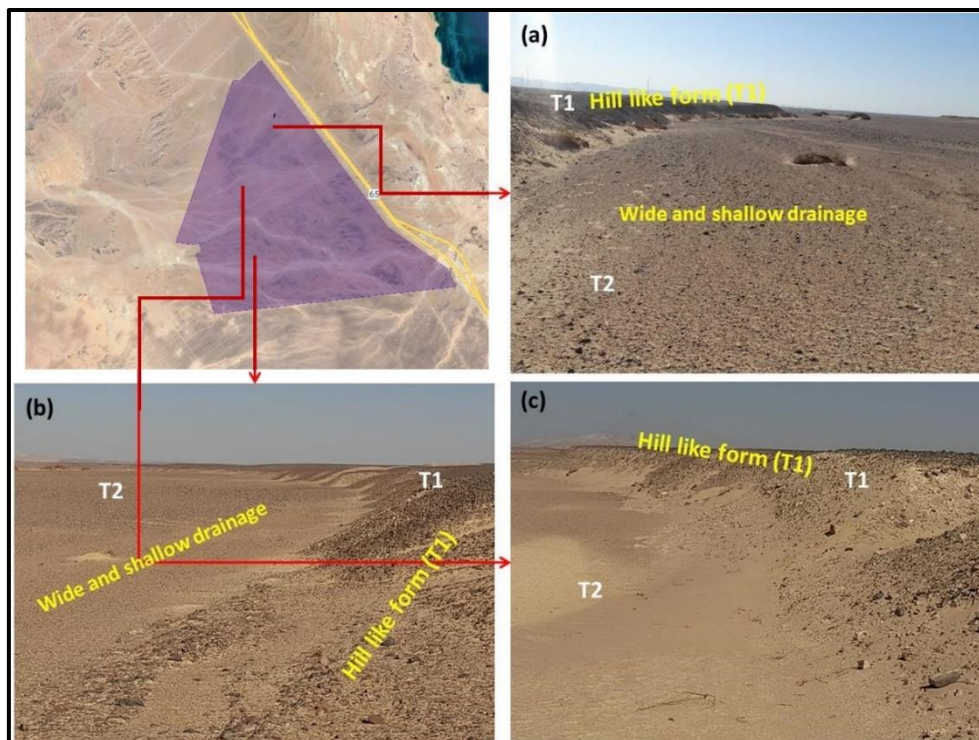


Figure 11: Drainage lines in the wadi (changes in elevation) T1 (ranging between 0.5m – 2 m from the wadi floor), T2 0.5m and lower with elevation generally decreasing from west to east toward the GoS

Pumped and observation wells were drilled by Desert Research Institute within the Wadi Dara area south of the project site (Sewidan et al., 1991), in addition to the wells drilled by RIGW, 2005, are the main source of the groundwater information in the study area as shown the figure below.

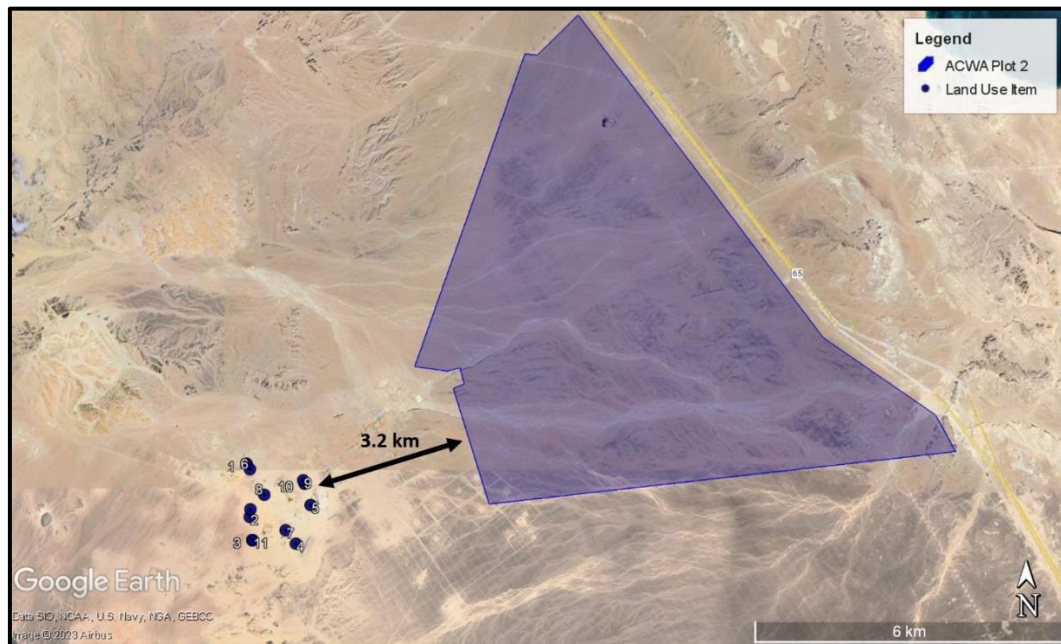


Figure 12: Location Map of the Drilled Wells at Wadi Dara

2.5.4 Habitats and Flora

The biodiversity baseline assessment concludes that the Project site in general is in a hyper-arid desert with low ecological significance and sensitivity. Flora species that were identified are considered of least concern and common to such area habitats. There are no sensitive habitats recorded within the Project site.

2.5.1 Birds (avi-fauna)

The area is located within a very important migratory route for soaring birds. A baseline assessment was undertaken that included an avi-fauna survey that studied the use of the migratory and resident soaring birds of the Project site, while providing a detailed analysis of the durations that these species use the site and the elevations at which they are present, which would eventually provide an in-depth understanding of the predicted impact of the Project on bird species.

The survey was undertaken through nine (9) observation points that covered the spring 2022 and 2023 and autumn 2022 and 2023 bird migration seasons. On average, each observation point was for a minimum of 8 hours per day and per season as follows: in spring 2022 – 185.9 hours per VP for a total of 3,345.3 hours; autumn 2022 – 264.9 hours per VP for a total of 4,768 hours; spring 2023 – 247.5 hours per VP for a total of 4,455 hours; and autumn 2023 – 266.6 hours per VP for a total of 4,798.5 total hours.

During spring surveys, over 241,003 individual birds were recorded in spring 2022 and 304,607 in 2023. In autumn, 231,381 individual birds were recorded in 2022 and 234,193 in 2023. Twenty-six (26) species were recorded. Among globally threatened species during the observation periods are detailed in the following tables.

Table 3: Avifauna designated as Vulnerable Species identified during Avi-fauna Survey for all seasons

Species	Spring 22		Spring 23		Autumn 22		Autumn 23	
	Total Number	At risk height	Total Number	At risk height	Total Number	At risk height	Total Number	At risk height
Eastern Imperial Eagle	30	30	14	6	0	0	0	0

Greater Spotted Eagle	21	21	6	1	0	0	0	0
Sooty Falcon	2	2	1	1	0	0	4	4
TOTAL	53	53	22	8	0	0	4	4

Table 4: Avifauna designated as Endangered Species identified during Avi-fauna Survey for all seasons

Species	Spring 22		Spring 23		Autumn 22		Autumn 23	
	Total Number	At risk height	Total Number	At risk height	Total Number	At risk height	Total Number	At risk height
Steppe Eagle	1267	1098	6859	2066	28	12	27	15
Egyptian Vulture	51	49	51	26	8	4	5	4
TOTAL	1,318	1,147	18,886	2092	36	16	32	19

Table 5: Avifauna designated as Near Threatened Species identified during Avi-fauna Survey for all seasons

Species	Spring 22		Spring 23		Autumn 22		Autumn 23	
	Total Number	At risk height	Total Number	At risk height	Total Number	At risk height	Total Number	At risk height
Pallid Harrier	16	16	1	0	11	10	11	9
TOTAL	16	16	1	0	11	10	11	9

2.5.2 Bats

The presents of bats was evaluated using a nocturnal acoustic survey and a manual search of possible roosting sites across and within the near proximity of the Project area. Eight (8) acoustic detectors were utilized across 24 locations that were aligned with intended wind turbine locations. Based on the literature review, several bat species of 'least concern' (IUCN Red List of Threatened Species) could be present in the area; however, the Project site is characterized by low vegetation coverage and limited habitat.

There was a single observation recorded during the entirety of the sixty-night acoustic survey.

2.5.3 Reptiles and Amphibians

In general, the composition of the herpetofauna within the Project area has low densities of common and widespread species. The exception is the Egyptian Spiny-tailed Lizard *Uromastix aegyptiata*, which is a IUCN Vulnerable species, that was recorded in several locations within the Project area.

2.5.4 Archaeology and Cultural Heritage

An archaeological baseline survey has been carried for the Project site which concluded the absence of records of any sites of interests or significance within the Project area. Therefore, there are no anticipated impacts.

The main potential impact could occur during the construction phase from site preparation activities if a possible site of archeological remains is uncovered. Improper management (if such sites are discovered) could potentially disturb or damage such sites. Nevertheless, the ESIA requires the implementation of chance find procedures if such remains in the ground be discovered throughout the construction phase. With the implementation of such measures the impact is considered not significant.

2.5.5 Air Quality and Noise

An air quality and noise baseline was undertaken for the Project area at three monitoring points for a period of

24 hours. The baseline concluded that pollutant levels for all parameters measured are significantly lower than the maximum allowable ambient air levels indicated within the legal limits. Similarly for noise, the results were within national limits for both day and night-time.

No key source of noise emission or activity were noted throughout the monitoring period. Therefore, the exceedance of noise levels is mainly attributed due to the intensity and speed of the wind at the measurement sites, despite efforts to mitigate the effect of wind speed on measurements.

Construction and operation activities of wind power project are passive in nature and do not result in any key air emissions or significant noise sources. However, construction activities may increase level of dust and particulate matter emissions, which will temporarily impact ambient air quality due to the use of heavy machinery contributing to both noise levels and dust.

2.5.6 Infrastructures and Utilities

Various items of infrastructure are found in and in the proximity of the Project site. Within the Project site is the decommissioned dumpsite, which in recent years had been subject to informal dumping, receiving animal carcasses from the nearby Wadi Dara Village.

Adjacent to the Project site's eastern border is Cairo-Hurghada Highway, from which the main, paved road leading to Wadi Dara Village intersects the Project site. A smaller dirt road also intersects the Project site.

There is a water desalination plant and a wastewater treatment plant, both of which are located north of the Project site along the Cairo-Hurghada Highway, located at distances 3 km and 9.1 km, respectively. Military units are located at distances 34 km and more from the Project site's northern border. Several communications towers also line the highway, two of which are adjacent to the Project site's eastern side. With the GoS being a hub of petroleum production, active petroleum activities are located along the coast, opposite the project site, and areas of former excavation activities (excavated and leveled land) north of the Project site within 4.4 km.

Servicing electricity transmission is the overhead transmission line (OHTL) that transects through the Project site's eastern side, leading to the wind farms of NREA Concessionary Area's Zone 3's wind farm projects.

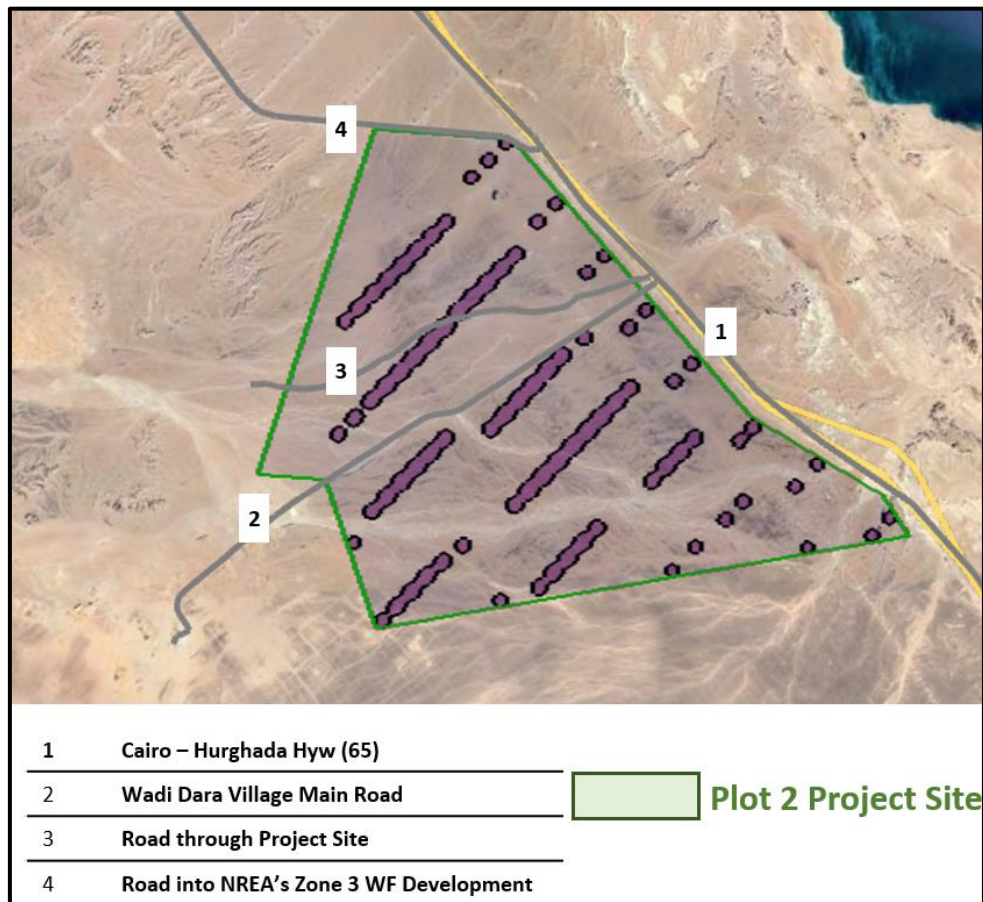


Figure 13: Vehicular Infrastructure



Figure 14: Decommissioned dumpsite located within Plot 2

2.5.7 *Socio-economic Conditions*

The main impact anticipated on socio-economic conditions is related to potential job opportunities for local communities from the Project during construction and operation. However, such impacts are limited taking into account the nature of activities. No details are available at this stage on the number of job opportunities targeted to local communities, type of jobs, duration, etc.; however, as many as 750 job opportunities are to be required during construction and 20 positions during operational phase.

Taking the above into account, the Project is committed to ensuring that priority for job opportunities are targeted for local community members to the greatest extent possible throughout the construction and operation phase for skilled and unskilled jobs.

At a later stage, a local recruitment procedure will be developed by the Contractors and Operator, under supervision from the Project. The procedure will identify the number of job opportunities targeted for local communities and recruitment process will be undertaken through the Governorate's Labor Office. Based on that, the recruitment procedure will also include a selection process that is fair, transparent and provides equal opportunities for all including females.

In addition, the Project will also implement a Social Responsibility Program that will be implemented for the local communities based on their needs and requirements.

2.5.8 Occupational Health and Safety and Worker Accommodation

During the construction and operation phase there will be occupational health and safety risks to workers, such as working on construction sites, exposure electric shock hazards during maintenance activities, working at heights, etc. The ESIA requires that the Contractor and Operator prepare an Occupational Health and Safety Plan (OHSP) tailored to the Project's site and activities. Such plans aim to ensure the health and safety of all personnel in order to concur and maintain a smooth and proper progress of work at the site and prevent accident which may injure personnel. With the implementation of such measures the impact is considered not significant.

In addition, the Contractors will prepare a worker accommodation plan, which will define the minimum health and safety standards and principles for worker accommodation and ensure impacts on community health and safety from worker influx are managed and controlled. This could include impacts related to pressure on infrastructure, services and utilities, introduction of new reservoirs of diseases, inappropriate code of conduct by workers towards local communities, possible increase in social vices, and other.

2.5.9 Community Health, Safety, and Security

During construction and operation phase the main impacts on community health, safety and security include the noise, shadow flicker, trespassing by unauthorized personnel, and potential occurrence of incidences between site personnel and communities. These potential impacts are outlined below, accompanied by mitigation and monitoring measures in brief (full elaboration included in the ESIA).

3. REGULATORY AND POLICY FRAMEWORK

This chapter discusses the environmental clearance process, regulatory requirements for compliance throughout all project phases.

3.1 Egyptian Environmental Institutional Framework

Egyptian Environmental Affairs Agency (EEAA)

The EEAA is an authorized state body regulating environmental management issues. Egyptian laws identify three main roles of EEAA:

- A regulatory and coordinating role in most activities, as well as an executive role restricted to the management of natural protectorates and pilot projects.
- The responsibility of formulating the Environmental Management (EM) policy framework, setting the required action plans to protect the environment and follow their execution in coordination with Competent Administrative Authorities (CAAs).
- The responsibility of EEAA in reviewing and approving the ESIA studies for new projects/expansions undertaken as well as monitoring the implementation of the ESMP.

Environmental Management Unit (EMU)

The Environmental Management Unit (EMU), at Governorate and district level, is responsible for the environmental performance of all projects/facilities within the Governorates premises. The Governorate has established EMUs at both Governorate and city/district levels. EMUs are responsible for the environmental protection within the Governorate boundaries. They are mandated to undertake both environmental planning and operation-oriented activities. EMU is mandated to:

- Follow-up the environmental performance of the projects within the Governorate during both construction and operations phases to ensure the project is in compliance with the laws and regulations as well as with the mitigation measures included in its ESIA approval.
- Investigate any environmental complaints filed against projects within the Governorate.
- EMUs are administratively affiliated to the Governorate, yet technically to EEAA. EMUs submit monthly reports to EEAA with their achievements and inspection results.
- The Governorate has a solid waste management unit at Governorate and district level. The units are responsible for the supervision of solid waste management contracts.

Competent Administrative Authorities (CAAs)

The Competent Administrative Authorities (CAAs) are the entities responsible for issuing licenses for project construction and operation. The ESIA is considered one of the requirements of licensing. The CAA for this project is NREA. NREA is thus responsible for receiving the ESIA studies, checking the information included in the documents concerning the location and for the suitability of the area to the Project activity. It is also responsible for ensuring that the activity does not negatively impact the surrounding activities and that the location is in compliance with the ministerial decrees related to the activity. NREA forwards the documents to EEAA for review and to issue its response in 30 days period. They are the main interface with the project proponents in the ESIA system. The CAA is mandated to:

- Provide technical assistance to Project Proponents

- Ensure the approval of the Project Site
- Receive ESIA Documents and forward it to EEAA
- Follow-up the implementation of the ESIA requirements during post construction field investigation (before the operation license).

3.2 Egyptian Environmental Clearance Process

The ESIA for development projects in Egypt is governed by Law No. 4 of 1994 and its amendments, which require an environmental assessment for all electricity generation projects, including renewables. Wind farm projects fall under Category C, necessitating a full ESIA.

The process involves mandatory public consultations twice: once during the scoping phase and again after the draft EIA is prepared. The draft EIA summary must be disclosed in Arabic before public consultation. Following the ESIA, the final report is stored at EEAA's library and made available online. Sensitive information can be withheld.

The ESIA includes:

- Regulatory and legal review
- Project description
- Baseline environment
- Impact identification and analysis
- Alternatives analysis
- Public consultation
- Environmental Management Plan (EMP)

The ESIA report is reviewed by EEAA, which may request revisions before final approval. The NREA is the licensing authority for wind projects.

3.3 Egyptian E&S Regulatory Context

This section lists those legislations that are directly related to environmental and social compliance that must be adhered to by all parties involved in the Project throughout the planning and construction, operation, and decommissioning phase. These legislations include: (i) those issued by EEAA (laws, regulations and instruction), and (ii) the relevant national legislations issued by other line ministries (laws, regulations, instructions, standards).

The table below lists the key relevant legislation and regulator/entity relevant to each of the environmental and social parameter being studied and assessed within this ESIA. Throughout the following Chapters, reference to the requirements set out within those legislations is provided under each relevant parameter.

Table 6: Relevant Legislation and Regulations of Environmental and Social Parameters

Legislation
Land Use
Electricity Law 87/2015
Law 10/1990
Law 577/1954
Civil code 131/1948

Unified Building Law No. 119 of year 2008
Geology, hydrology, hydrogeology
Law 4/1994
Management of solid waste and hazardous waste generated from the facility during generation, handling, transportation and disposal
Law 4/1994 amended by Law 9/2009 and ER 1095/2011 amended by Decree 710/2012)
Law 202/2020 on waste management and its executive regulation 722/2022
Control of the wastewater discharge into the sewage system and public network.
Ministerial Decree 44/2000, Decree of Law 93/1962
Biodiversity, Birds, and Bats
Law 4 of 1994
Environmental Impact Assessment Guidelines and Monitoring Protocols for Wind Energy Development Projects along the Rift Valley/Red Sea Flyway with a particular reference to wind energy in support of the conservation of Migratory Soaring Birds (MSB)
Archaeology and cultural heritage
Law 117/1983
Air quality and noise
Law 4/1994 amended by Law 9/2009 and ER 710/2012
ERs (amended by Decree 1095/2011 amended by Decree 710/2012)
Modified ERs (710/2012) of Law 4/1994
Law 4/1994
Law 4/1994 and its modified ERs
Infrastructure and utilities
Petroleum pipelines Law 4/1988
Occupational health and safety
Law 4/1994
Law 12/2003 on Labour and Workforce Safety
Law 12/2003 on Labour and Workforce Safety and Book V on Occupational Safety and Health (OSH) and assurance of the adequacy of the working environment
Law 137/1981
Decree 458/2007
Decree 162, 2019
Decree 162, 2019
Law 94/2003
EEAA EIA guidelines
Socio-economics
Law 94/2003 EEAA EIA guidelines

4. ENVIRONMENTAL AND SOCIAL IMPACTS

4.1 Landscape and Visual

Potential Impacts during the Operation Phase:

- Visual impacts from turbines include changes to landscape aesthetics.
- Turbines are visible from several kilometers away.
- Potential visual distraction for drivers passing by on highways.
- Impact magnitude is medium due to the visibility of project elements.
- Impact sensitivity is moderate considering key visual receptors.

Mitigation Measures: Operation Phase (in brief):

- Install clear and informative signage on highways to alert drivers and provide guidance.

Monitoring and Reporting Requirements:

- Inspect highways to ensure signage installation.

4.2 Land Use & Infrastructure

Potential Impacts Overview:

- The Project site overlaps with an area previously utilized by the Wadi Dara Cooperative Association and private investors.
- Formal objections and acknowledgments regarding land use need to be addressed.
- Failure to address land use issues could lead to long-term negative impacts and potential conflicts with Bedouin Groups and private investors.
- Impact significance is moderate due to potential disputes and impacts on land use, yet, as mentioned above, were addressed through the reallocation of lands to the Cooperative by the Red Sea Governorate.
- Consequential impacts of the dumpsite, located centrally within the Project site, if its contents were to remain on site in attracting birds

Mitigation Measures (in brief):

- Obtain formal approval from the Red Sea Governorate for removal of structures.
- Conduct formal consultations with private investors through the Wadi Dara Association.
- Coordinate with Bedouin Groups for employment and procurement opportunities.
- Implement a Social and Environmental Plan (SEP) focusing on Bedouin engagement and community development.
- Initiate community development programs outlined in the Community Engagement Plan (CEP) and Corporate Social Responsibility (CSR) program.

Monitoring and Reporting Requirements:

- Submit formal approval from the Red Sea Governorate.
- Submit final detailed designs or proof of consultation with investors.
- Monitor effectiveness of grievance mechanisms for the Bedouin community.
- Provide documentation of employment and procurement procedures including references for Bedouin groups.
- Submit evidence of coordination and agreement with Bedouin groups as part of the SEP.

4.3 Biodiversity (not including birds)

The main impacts on biodiversity are mainly from improper conduct, traffic control and housekeeping practices by workers (i.e. hunting of animals, discharge of hazardous waste to land, etc.) during the construction and operation phase throughout the site to safeguard flora and fauna. The ESIA has identified adequate mitigation measures which aim to control such impacts and ensure proper conduct and housekeeping practices are implemented. With the implementation of such measures the impact is considered potentially significant.

Potential Impacts Overview:

- Habitat Loss, Fragmentation and Degradation
- Introduction of invasive species
- Disturbance of identified species on site

Mitigation Measures:

- Mandatory staff induction for all site including a comprehensive biodiversity element where the baseline ecological value and sensitivity of the site will be discussed.
- Prior to construction works, working areas will be clearly marked (using temporary fencing (e.g. orange netting attached to wooden posts)) so that site workers fully understand the working area and minimize encroachment into features of local habitats and identification of sensitivity of receptors
- On completion of construction the engineering, Procurement and construction (EPC contractor) will be responsible for habitat rehabilitation
- Following construction, an area of around 2.0 km² will be enhanced using appropriate, native planting in suitable parts of the Project Area to ensure no net loss of habitat has occurred
- Occurrences of non-native species are to be identified and removed
- Wheel washing facilities constructed at the Project site's entrance and wastewater disposed of accordingly to prevent spread of undesirable species
- Species identified as vulnerable receive specific mitigations under the Construction Biodiversity Management / Biodiversity Action Plan
- Working areas to avoid vegetated areas
- Relocation of vulnerable species when necessary, such as for the Egyptian Spiny-tailed Lizard
- Vehicular speeds will be limited and enforced to avoid traffic collisions with animals

- Strict controls enforced on poaching and collection for animals
- Proper and strict housekeeping measures and waste management enforced

Monitoring and Reporting Requirements:

- Outside of agreed working areas will be prohibited and working areas will be subject to regular check by the EPC Ecologist to check enforcement of working areas.

4.3.1 Birds (avi-fauna)**Potential Impacts Overview:**

- Key impacts anticipated on birds is during the operation phase and mainly related to risk of bird strikes and collisions with rotors of the operating wind turbines. The majority of species passing through are at low risk of collision annually. Those of conservation concern (i.e. considered endangered by the International Union for the Conservation of Nature's Red List) or associated with potentially high levels of collision are the Steppe Eagle, for which collisions could amount to approximately 12.25 collisions during the operational lifetime of the Project and the Egyptian Vulture – 0.32 collisions during the Project's operational lifetime.
- Other species with notable collision risk that were identified included Levant Sparrowhawk (0.24 collisions per year), Steppe Buzzard (3.43), White Stork (23.02), Common Kestrel (0.32), Black Kite (0.6), White Pelican (1.57) and Honey Buzzard (7.86). The populations of these species are typically abundant, and the species are not of conservation concern.
- Of particular interest regarding the monitoring of birds was the dam and artificial pond located within the Project site. The artificial pond, which forms during rainfall in the winter typically once every four years, is a source of attraction for storks, pelicans and other water birds. Water was present in the dam in 2022, at which time 6,000 White Storks were recorded in a single day with over 15,000 individuals (about 11% of the total number of birds recorded during the migration season). Scarce numbers of birds were present at this location when no water was present in 2023.
- The Collision Risk Model indicated that species passing through the Project site are at low risk of collision on an annual basis.

Mitigation Measures:

- Bird Monitoring and Active Turbine Management Program (Shutdown On-Demand and Predictive Fixed Shutdown Programs using strategically located vantage points for monitoring flight activity and to facilitate effective turbine shutdown and effective communication networks between bird observers as well as and wind turbine operators
 - All of the turbines and a buffer area is to be covered by constant observation.
 - The buffer is to ensure that enough time is available for WTG to be shut down when birds approach
 - Observers are to work in pairs and in shifts to ensure a vigilant effort from observers.
 - Observers are to communicate both with shut down operatives and other observers to ensure effective practices
- Shut down protocol is to be undertaken in discussion with other operatives in the region to discuss best practice for the location

- Current WTG layout takes into account a 2km setback distance from the Dam area which is a source of attraction for migratory birds particularly during spring season.

Monitoring and Reporting Requirements:

- Fatality Monitoring Program entailing a systematic fatality survey (i.e. carcass searches) by trained experts which have become the main means of monitoring collision victims and estimating collision rates at wind power plants worldwide.
- Operational monitoring is to be completed for at least the first 3 years of operation, with scope to continue depending upon results during the first three years, all years of operation to monitor actual levels of mortality.
- Post construction fatality monitoring is to be completed at all of the turbines and the programme of post construction monitoring is to include carcass searching, searcher efficiency trials and carcass persistence trials. The results of the post-construction fatality monitoring is to be used to inform a GenEst Analysis. Such effort is to be in line with the Post-construction Bird and Bat Fatality Monitoring for Onshore Wind Energy Facilities in Emerging Market Countries – Good Practice Handbook and Decision Support Tool (2023).

4.4 Additional Studies

I. Critical Habitat Assessment (CHA) outcomes

A Critical Habitat Assessment (CHA) has been completed for the Project, using Criteria from EBRD's Performance Requirement (PR) 6, "Biodiversity Conservation and Sustainable Management of Living Natural Resources". Plot 2 has ten species (all bird species) triggering Critical Habitat: Steppe Eagle, Egyptian Vulture, Levant Sparrowhawk, Eastern Imperial Eagle, Steppe Buzzard, White Stork, Honey Buzzard, Black Stork, Common Crane and White Pelican.

Plot 1 has two species as Priority Biodiversity Features (PBF): one bird species () and one reptile species (Egyptian Spiny-tailed Lizard).

II. Cumulative Effects Assessment (CEA) outcomes

To determine priority bird VECs for the Projects, the approach that was followed was originally modelled on the Tafila Region Wind Power Projects Cumulative Impact Assessment (IFC, 2017), and has been modified to the local conditions and data available through a previous Cumulative Effects Analysis that was undertaken for the Lekela (West Bakr) 250 MW (TBC, 2018), AMEA Power (Amunet) 500 MW WPPs (ECO Consult 2022) and IPH (ECO Consult 2023). Similarly, a staged screening of the list of preliminary bird species was undertaken, to develop a final list of priority bird VECs that were likely to be at greatest overall risk from the Projects. The data used in the process included all the data that was originally available for the aforementioned CEA's in addition to all recent data collected in the region up to 2023, including SWE's on-site assessments that were carried out in spring and autumn 2022 and 2023.

The process has identified 13 species, which had an Overall Risk of Major or Moderate, are considered priority bird VECs for the Projects. Some of these were already identified by the Lekela CEA and all within the IPH CEA. Whilst peak counts have been updated for two species there are no changes to risk status from the IPH document.

Mitigation suggested within the CEA includes shut-down on demand and use of bird flight diverters on OHTLs. Monitoring of flights by VECs as PCFM outcomes are intended to improve mitigation outcomes. On a wider scale Data sharing, Joint training of observers, Coordination of observer networks and a Discussion forum are explored as opportunities for all projects locally to work together and improve outcomes.

III. Biodiversity Management Plan (BMP) outcomes

The BMP highlights mitigation measures proposed to reduce project impacts following the principles of the “mitigation hierarchy” (*i.e.* avoidance, minimization, rehabilitation/restoration and offset. General measures include, use of a biodiversity manager, an induction and training program, pollution control, driving protocol, control of hunting and collection of species, management of invasive species and a waste management plan.

Species specific mitigation is also proposed for both the construction and operational phases. Construction phase mitigation is primarily focused on pre-construction surveys, timing works to avoid bird breeding seasons and a translocation plan for Egyptian Spiny-Tailed Lizard. Operational mitigation is not required for most species groups.

Mitigation for the operational phase for avifauna includes PCFM monitoring, the use of diverters and an emphasis on net gain, offsets and adaptive management.

IV. Biodiversity Action Plan (BAP) outcomes

The overall approach to mitigation includes operational shut-down on demand of turbines and bird flight deflectors on OHTL as well as micro-siting (where possible) and translocation of Egyptian Spiny Lizard as required. To ensure all species are managed throughout the life of the project a best practice operational fatality monitoring program will be in place which is the cornerstone of an adaptive management approach to adjust an mitigation or offsetting requirements following the fatality monitoring.

BPCFM data from three local wind farm sites and eight local OHTL sites was used as the basis to provide the likely residual impact of the turbines and OHTL. Where no impact has been recorded in local sites of species that were recorded through the Project area the projects Collision Risk Model was used as the baseline for residual impact. Offset requirements are:

- 1 or less per year: Eastern Imperial Eagle, Sooty Falcon, Egyptian Vulture, Black Stork, Red-footed Falcon, Common Crane, Greater Spotted Eagle, Short-toed Eagle and Lesser Spotted Eagle;
- Up to 3 birds per year: Steppe Eagle, Levant Sparrowhawk, White Pelican;
- 10 birds per year: Steppe Buzzard;
- Up to 40 birds per year: Honey Buzzard; and
- Up to 60 birds per year: White Stork.

Offsetting will be achieved via range of projects including:

- Retrofitting of OHTLs with deflectors in Egypt;
- Retrofitting of towers / burying of cable in high impact electrocution area of OHTL in Egypt and Jordan;
- Reducing the impact on birds of illegal hunting and taking of birds in Egypt, Malta and Georgia.

4.5 Infrastructures and Utilities

Potential Impacts Overview:

Existing Roads and Networks:

- Highways and roads traverse the project site, facilitating access but potentially increasing traffic and associated risks.

Mitigation Measures:

Existing Roads and Networks:

- Implement traffic management measures to minimize congestion and accidents.

4.6 Community Health, Safety, and Security

Potential Impacts Overview:

Wind turbines produce noise and cast shadows (known as shadow flicker) during operation. As the rotor blades rotate, shadows pass over the same point causing an effect known as ‘shadow flicker’. Both noise and shadow flicker could be a source of nuisances and disturbances. However, within the Project site and surrounding there are no sensitive receptors that could be affected by such impacts and therefore this is considered irrelevant.

Potential Impacts from Trespassing of Unauthorized Personnel:

- Unauthorized access to Project components could pose safety hazards and public safety concerns.
- Impact considered of moderate significance, mainly during operation phase.

Mitigation Measures:

Trespassing of Unauthorized Personnel:

- Implement Security Risk Assessment measures, including locked doors, fencing, onsite guards, and informative signs.

5. STAKEHOLDER CONSULTATION AND ENGAGEMENT

5.1 Targeted Consultations

As part of the scoping process of the Project, targeted consultations were undertaken with key stakeholders that are relevant to the Project to include but not limited to: (i) central governmental entities; (ii) local governmental entities; (iii) key Non-Governmental Organizations (NGOs); and other.

The objective of such consultations was to:

- Introduce project (rationale, objective, location, key components, etc.)
- Explain and discuss overall methodology for ESIA study
- Explain and discuss key anticipated impacts as relevant
- Identify and determine additional requirements or key issues of concern to be taken into account for the ESIA study

Throughout the consultations a handout was prepared and distributed to such stakeholder groups with key information to include but not limited to rationale for Project, Project location and setting, key components and activities of the Project and other as applicable.

The table below is a condensed breakdown of the stakeholder categories that were engaged.

Table 7: Summary of the consultation activities that were conducted in project area

Stakeholder	Number	
	Males	Females
Ministry of Tourism and Archeology; Red Sea Archeology and Heritage Institute	2	
Nature Conservation Egypt (NCE)	1	-
Egyptian Environmental Affairs Agency EEAA	1	-
Egyptian Electricity Transmission Company EETC	-	4
EEAA Red Sea Branch	1	-
State property Department in the Red Sea Governorate	1	-
Ras Gharib City Council	1	-
local unit of Wadi Dara village	5	-
Red Sea Water and Wastewater Company	1	-
Department of Planning and Projects in the Red Sea Governorate	-	1
General Petroleum Company	1	-
General Administration of Ground Water in Red Sea	-	1
Etisalat Misr Orange company	2	-
Radio and Television Unit in Ras Ghareb and the Red Sea Governorate	4	-
Bedouin families in Ras Gharib	12	-
Total	32	6

The table below presents summary for the outcomes of the stakeholder consultations undertaken.

Table 8: Stakeholder Engagement Strategy and Plan in Relation to the Project

No.	Entity	Outcomes
1	Ministry of Tourism & Red Sea Archeology and Heritage Institute	Attendant(s): - Head of the Egyptian Antiquities Sector - Director of the Red Sea Antiquities Key points: - The nearest known archaeological and heritage sites are located in El Qusayr 232 km from the project site in Jabal El Zayt and 284 km from the Project site in the Gulf of Suez - An appropriate procedure should be in place prior to construction works in order to respond to the potential archaeological and cultural finds at the sites. As part of the procedure, the expectation is that construction works are halted temporarily until the Supreme Council of Antiquities is notified and legal procedures for the documentation and study of the artifact are commenced. Following the Council's further instruction, construction works would resume. Recommended actions include the following: - Desk-based studies by experts (including literature and historic map reviews) - An archeologically survey prior to the commencement of construction.
2	Nature Conservation Egypt (NCE)	Attendant(s): - Director of the NCE Key points: - The project site is located within a critical migration pathway and home to the Egyptian Lizard. - Delivering and incorporating insights on the cumulative impact on biodiversity, and birds in particular, of developed and future wind farms into ESIA is critically needed. - The attendant is currently conducting a biodiversity survey for a nearby area, which was also allocated for wind farm development. The information and data contained wherein may be provided when it (the survey results) is available for use in the development of the ESIA.
3	Egyptian Environmental Affairs Agency (EEAA)	Attendant(s): - Director of the Energy Projects Impact Assessment Department Key points: - The locations of the project sites are important to biodiversity, particularly for migrating birds. - The discussion (echoing above statements) emphasized that there needs to be greater understanding of the cumulative impacts of the wind energy projects operating and being developed as well as the infrastructure connecting them to the OHTLs in the Gulf of Suez and Jabal al Zeit Areas. - Adherence to guidelines for community and stakeholders consultation in the development of ESIA as established by the EEAA.

No.	Entity	Outcomes
4	Egyptian Electricity Transmission Company (EETC)	Attendant(s): - General Manager of the Environmental and Social Assessments Units - Environmental and Social Specialists for Electricity Generation Projects Key Points: - Adherence to environmental standards during construction and operation - The sooner the initial paths for the OHTL infrastructure are drawn for each station, the easier it may be to determine and account for their potential impact on migrating birds. EETC has been in the process of meeting with EEAA officials to determine the cumulative impacts of constructing OHTLs on bird and migrating bird populations as well as identifying mitigation measures to reduce such impacts on biodiversity overall.
5	EEAA Red Sea Branch	Attendant(s): - Head of the EEAA Red Sea Branch Key points: - Observing environmental standards during all phases of the project and mitigating impacts that may be detrimental to biodiversity and migrating birds.
6	State Property Department in the Red Sea Governorate	Attendant(s): - Director of the State Property Department in the Red Sea Governorate Key points: - The land allocated for the development of wind farms is state property. There is no ongoing dispute over land nor property rights in the project area. - There are no projects for agricultural reclamation and animal production except for the area designated for Wadi Dara Association, which is still in the development phase, and does not intersect with the land allocated for energy production projects. - Promoting the participation of local communities would likely be aided by the advertisement and provisioning of job opportunities to locally based individuals during the course of the project. Coordinating with the respective City Council(s) was also advised.
7	Ras Gharib City Council	Attendant(s): Head of the Ras Gharib City Council

No.	Entity	Outcomes
		Key points: - The City Council is supportive of the wind energy projects and investors coming to the area. Wind energy projects are considered the only investment initiative that's come along other than oil projects. - Echoing the statement from above, local communities and key local stakeholders would be motivated to participate and be supportive of the initiative if employment opportunities were offered to the local community. Announcements for employment can be done through the Ras Gharib City Council and through the Council's social media. - The CSR that has been discussed and / or implemented in past years has been limited in scope (typically being designed to support the projects of developers) and have rarely addressed the core interests of the local community including employment opportunities for youth and aiding groups of the local community to be able to develop and promote sustainability.
8	Wadi Dara Representatives	Head of the local unit of Wadi Dara; President of Wadi Dara Valley Association; and employees/ workers within the village The following points were made: - The head of the Wadi Dara Association and the head of Wadi Dara local unit stated that the village lacks many services and the services it does have are inadequate due to increased population of its communities. Their main concerns in this regard are the provisioning of electricity for economic activities such as poultry farms. Additionally, they emphasized their interest in agricultural reclamation. - He mentioned that the allocation of lands by NREA for the development of energy project in January of this year had resulted in the annexation of parts of the association's lands which was allocated to around 4 investors. Alternative lands of state property were annexed to Wadi Dara Association instead of the land that was included in energy projects as compensation; however, no compensation was provided for these landowners given that they have undertaken some early preparatory works on these lands to include levelling works, demarcation, some excavations, etc. - There is no objection to the alternative land provided by the Red Sea Governorate as it is considered acceptable.
9	Red Sea Water and Wastewater Company (RSWWC)	Attendant(s): - Head of the Red Sea Water and Wastewater Company Key Points: - There are considerable issues regarding the quality (namely high salinity) of groundwater in the governorate, which depends on groundwater for irrigation. The water is non-potable due to its high salinity. - The Project Area is considered uninhabited desert areas and do not contain water nor sanitation infrastructure. - The Petroleum and energy production projects that are already established in the area depend on water purchased from water trucks from Ras Gharib city by contractors. - The Ras Gharib Water and wastewater Company provides services to the urban residences and the area's oil companies including water supplies to Wadi Dara village. - RSWWC's branch located in Ras Gharib could facilitate the site's water needs during the construction and operation phases.

No.	Entity	Outcomes
10	Department of Planning and Projects Department of the Red Sea Governorate	Attendant(s): - Staff of Planning and Projects Department of the Red Sea Governorate Key Points: - Gas exploration by General Petroleum Company has been the only other development in the area prior to the Presidential Decree for energy projects in 2016. - The project site is not included in any other of the department's future plans for the development of the Red Sea Governorate. - Because flash flooding has become a concern in recent years, the General Administration of Groundwater in the Red Sea constructed dams within the last five years to control flash flooding. - Request for the locations of oil and gas infrastructure should be made directly and officially to the General Petroleum Company.
11	General Administration of Ground Water in Red Sea	Attendant(s): - Staff civil engineer of the General Administration of Groundwater of the Red Sea Key Points: - In the past three years, the General Administration of Ground Water has implemented projects in Ras Gharib with the aim of reducing the risk of floods to the city and the surrounding villages. - The projects were implemented according to plans and studies prepared by experts from the Water Resources Research Institute of the Ministry of Irrigation. - These studies included field and hydrological surveys of the affected area, identified hazards in the area, and outlined structural mitigation measures to be implemented. - The General Administration of Ground Water has constructed lakes, dams, and an industrial canal with a length of 12 km, in addition to rainwater drainage at the bottom of Sheikh Fadl Road, which were established by the General Administration of Roads and Bridges. - The GOS area in general includes a number of important valleys that must be studied for flood risks before starting the Project, including: - El Huwayshiah Valley, high risk - Abu Hadd Valley, high risk - El Duhel Valley, medium to high risk - Dara Valley, medium to high risk - The following projects have been implemented in different areas of these valleys to reduce risks: 4 lakes were built 3 dams 2 culverts were built to drain rainwater - An industrial canal with a length of 12 km has been established parallel to the Ras Gharib-Hurghada Road

No.	Entity	Outcomes
12	Telecommunications Companies Etisalat Misr and Orange company	Attendant(s): - Government Relations Officer at Etisalat Misr - Network Engineer for Orange Company Key Points: - Officials from the telecom companies confirmed that the Project area has two telecom towers, one for Etisalat Misr and the other for Orange Company. They are located along the Ras Ghareb Al Shaikh road to the south of the project site. - The officials requested that Project-related details be made available at least six (6) months prior to the start of construction works in order to avoid potential impacts on the communications network, including: - information related to maximum turbine tip and blade height; - wind turbine fan diameter, - distance from turbine and existing communication tower, - and plans for future development of wind farms. - All of the communication towers are constructed near the main roads
13	Radio and Television Unit of Ras Ghareb and the Red Sea Governorate	Attendant(s): - Radio engineering officers - Network maintenance technicians Key Points: - Paths of the radio and television towers paths are close to the project site, extending from Zafarana to Ras Ghareb to Hurghada, in addition to other towers in the direction of Sheikh Fadl Road. - The distance between each tower is about 60 km, depending on the terrain of the area - The existing radio and television towers receive and transmit microwave signals, and for radio waves - FM, TV and VHF waves - The consultant sent a fax to Eng. Ashraf Hamed, Head of the Broadcast Engineering Sector at the National Media Authority, including an introduction to the project, the coordinates of the proposed project sites, and awaiting a response in this regard. The response letter affirms (with reference to Presidential Decree No. 116 of 2016, outlining the land allocated to NREA in the Gulf of Suez for the production of electricity from renewable energy sources and the establishment of wind stations) that the Project Site is not in conflict with the services of the radio and television transmission stations in Ras Gharib.
15	Bedouin groups	Two (2) meetings were held with the key representatives and heads of Bedouin families' tribes. The consultant presented the project and the proposed sites for wind farms in Jabal El Zeit and Gulf of Suez areas through maps. In addition to the positive impacts of the project were emphasized in terms of providing temporary job opportunities during construction phase and some limited opportunities

No.	Entity	Outcomes
		during operation phase. The results indicated the following: - There are no settled Bedouin communities in the two project sites. The only settled villages of Bedouin families in the desert area of Ras Gharib are in El Zafarana, and some families (3 families) settled in Wadi Dara village adjacent to the project site in Jabal El Zayt. In addition to some families from the nomadic Bedouins of El Khashman tribe who travel between the valleys in the mountainous area, which is about more 20 km away from the project sites. - The project site or its surrounding areas do not have any major land use activities such as grazing or farming activities. However, the area in general is subject to the Ghufrah system, which is divided between two families, Tababneh family and El Hamadin family. Responsible for the Ghufrah of the project sites is Hamadin family. - The heads of the families explained that the Ghufrah takes place according to predetermined arrangements and agreements between the Bedouin families, according to which the area of jurisdiction of each family is determined. Bedouin families highly respect these agreements because they regulate relations between them. Sheikh Eid representative of El Hammadin family, stated that the agreement defining the areas of jurisdiction of each family was signed by all heads of families in the area, and the Security Directorate in Ras Gharib city was notified of it, because according to this agreement, Bedouin families become responsible for the security of activities that take place in the area. - All attendees emphasized their welcome to wind energy projects in the area, because they represent a source of livelihood for them, and these projects do not conflict with the areas in which some Bedouin families settle or move. Also, this type of investment will not affect the current use of the lands because they are not used for grazing or any other activity other than oil exploration or limited sites for quarry equipment (crushers).



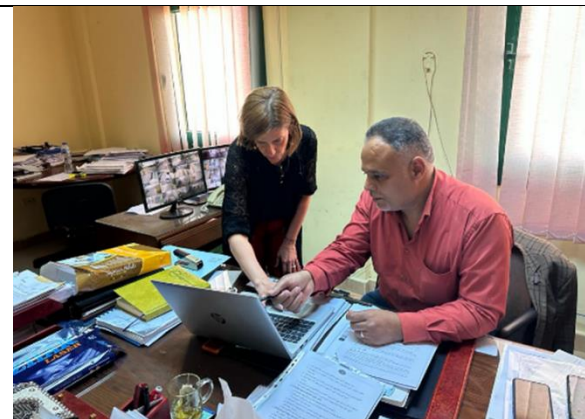
Consultation at Red Sea Antiquities with Head of the Egyptian Antiquities sector



Consultation with the Director of Energy Projects Evaluation Unit of the EEAA



Consultation with officials of the Environmental Department of the EETC



Consultation with the Head of the EEAA Red Sea Branch



Consultation with the Head of Ras Gharib City Council



Consultation with staff of the Planning and Projects Department of the Department of Planning and Projects of the Red Sea Government



Consultation with the General Manager of Petroleum Fields of General Petroleum Corporation



Consultation with Beodoun Groups within the Project Area

Figure 15: Selected photos from the consultations conducted

5.2 Public Scoping Session

A public consultation session was held in Ras Gharib City, Red Sea Governorate (Four Seasons venue) on May 24, 2023. The public consultation was an open session for anyone to attend that was announced through an advertisement that was published in El Akbar Newspaper two (2) weeks prior to the session.

Invitations were provided directly to certain stakeholder groups identified by RCREEE and the ESIA consultant to include: EEAA Headquarters and its regional branch, NREA, EETC, Red Sea Governorate (including its environmental office), Ras Gharib City Council, key NGOs / CBOs in the area (including women NGOs/CBOs), local community representatives, and Bedouin groups. Invitees were subsequently informed of the date, location and were provided an executive summary of the Project provided as hard and soft copies and through fax.

A total of 93 participants attended the session.

Table 9: Distribution of Participants

Attendance	No.
Egyptian Environmental Affairs Agency EEAA	2
EEAA - Red Sea	2
Egyptian Electricity Transmission Company EETC	2
Regional Center for Renewable Energy and Energy Efficiency RCREEE	3
New and Renewable Energy Authority NREA	2
Red Sea Electricity Company	1
Suez Winds Energy Company/ Developer	3
Environment Department in Red Sea Governorate	2
Ras Gharib City Council	3
Local community members (Ras Gharib)	32
Bedouin Communities	7
Clergy	2
Youth	4
NGOs	8
Academic institutions	2
Wind energy projects	6
General Petroleum Company and other oil and Gas companies	5
Directorate of Social Solidarity Red Sea	1
National Council for Women Red Sea	2
Total	89

The session was moderated by the following key entities: (i) Representatives from the Suez Wind Company (as the Developer); (ii) Director of the Environment Department in the Red Sea Governorate as a representative of the Red Sea Governor; (iii) RCREEE, EEAA, NREA and EETC representatives and (iv) ESIA consultant.

The public consultation began with a welcome speech by the representatives of all the aforementioned parties and underscored the opportunity for community discussion on the projects impacts, especially energy projects that help to increase investment projects and development.

The ESIA consultant presented the details of the ESIA process which was followed by an open discussion, in which attendees were given the chance to comment/ raise concerns. Among the comments raised by

the attendees were related to the economic impact of the intended project, the potential impact of the occurrence of flash floods in the area on the wind farm, potential health impacts on the community and the result of decommissioning of the project.

Regarding the first point, the planning, construction and operation of wind farms in the GoS, as part of GoE's ongoing initiative, has generated an interest on the part of the participants from the local communities in the potential benefits that the project may make available. The range of inquiries, in this regard, included the scale of employment opportunities for local persons and training, as well as the potential for subsidies on the cost of electricity. In response to employment, there are efforts to provide training, in collaboration with the Red Sea Governorate in conjunction with the formation of a Wind Energy Investors Association, to local residents to maximize local recruitment. Additionally, due to the significance of the GoS as a geographic area amid the international bird flyway and the potential risk to migrating birds the operation of the wind farm may pose, there is to be an initiative centered on recruiting and training Beduins in bird identification and classification to enhance monitoring of the Project's impact in this regard. As far as subsidies on electricity is governed and within the jurisdiction of the government. While the Project supports the GoE's objectives in increasing the share of electricity generated by renewable sources, there is currently no defined activation of the Project to provision subsidies on electricity costs in this way.

On the topic of flooding, there is a dam and artificial lake located within the Project site that fills during rainfall. To avoid risks that may be associated with flooding, such as damage to project infrastructure, inspections have been conducted to inform the placement of turbines and roads.

An inquiry was expressed about the safety and exposure to electromagnetic waves from the Project. The attending project team affirmed that wind energy generators emit minimal electromagnetic waves and that there is currently little evidence to suggest they impose a negative impact.

In general, the timeline for decommissioning is defined by the perceived viability of the project as well as by the scope of tenders offered by the Renewable Energy Authority.

5.3 Future Stakeholder Engagement and Consultation

Future stakeholder engagement and consultations will mainly include the following, each of which is discussed in further details.

5.3.1 Disclosure of the ESIA document

The below documents will be disclosed to allow any stakeholder to review the studies and comment on the scope of work undertaken, key issues identified and any other issues of concern they might have. At the end of the disclosure period, all received comments will be addressed and taken into account and an updated as appropriate.

- Non-Technical Summary (NTS)
- Stakeholder Engagement Plan (SEP)
- Environmental and Social Impact Assessment (ESIA) including OHTL assessment
- Critical Habitat Assessment (CHA)
- Environmental and Social Management System (ESMS) Manual

- Biodiversity Management Plan (BMP)
- Flood Study
- Bat Addendum Report
- Environmental and Social Action Plan (ESAP)
- Scope of work: Project Strategic Environmental and Social Assessment and Cumulative Impact Assessment. Note: the study itself will be undertaken throughout the disclosure period
- Cumulative Effect Assessment (CEA)
- Biodiversity Action Plan (BAP)
- Bird Migration Study for Suez Wind Energy ACWA Power BOO Wind Power Plant 1.1 GW during Spring and Autumn seasons, 2022
- Spring Bird Migration Study Suez Wind Energy BOO Wind Power Plant 1.1. GW – SWE Plots 1 & 2, 2023
- Autumn Bird Migration Study Suez Wind Energy BOO Wind Power Plant 1.1. GW – SWE Plots 1 & 2, 2023

The above documents are available at the following avenues:

- Developer Website **www.acwapower.com**. The documentation above will remain at the website for the life of the project.
- Hard copies available at

Red Sea Governorate

October 6, Hurghada,
Red Sea Governorate, Egypt
Tel: 065354627/06535546337

Ras Ghareb Local Governmental Unit

Location: Al-Mina Street City: 11432
Ras Ghareb – Red Sea
Tel: 01001318480 – 0120195877

- Soft copies can also be made available to stakeholders via email to:
- **arizk@acwapower.com**

5.3.2 Public Disclosure Session

A public disclosure session will be undertaken. The list will involve targeted stakeholders that will be identified by the “ESIA Team” in coordination with EEAA and other authorities. The session will be undertaken in the GoS primarily targeted for local governmental institutions and local communities – this session will be announced through newspaper advertisement at least one week in advance. The objective of the sessions is to:

- Introduce the Project to stakeholders;
- Identify the key anticipated impacts;
- Present the methodology for the ESIA study;
- Present key outcomes and conclusions; and
- Comments on scope of work undertaken, key issues identified and any other issues of concern.

As discussed earlier, once the public disclosure session is completed (and at the end of the 60-day disclosure period), all received comments will be addressed and taken into account and an updated ESIA will be submitted.

5.3.3 Stakeholder Engagement Plan

Stakeholder Engagement is an on-going process that involves: stakeholder analysis & planning, disclosure & dissemination of information, consultation & participation, grievance mechanism, and on-going reporting to Affected Communities. A Stakeholder Engagement Plan (SEP) is developed and implemented that is scaled to the Project risks and impacts and development stage, and be tailored to the characteristics and interests of the Affected Communities and key stakeholders.

The SEP for the Project describes the planned stakeholder consultation activities and engagement process and includes the following:

- Define the Project's approach to future stakeholder engagement;
- Identify stakeholders within the area influenced by the Project;
- Profile identified stakeholders to understand their priorities;
- Propose an action plan for future engagement with identified stakeholders; and
- Set out the grievance/project complaints mechanism.

The Developer is committed to implementing the requirements of the SEP throughout the lifetime of the Project. The SEP is provided as a standalone document.

5.3.4 Disclosure of approved ESIA

The final ESIA after its approval by both EEAA and IFAs such as the AfDB will be disclosed on the developer's website, competent authorities (Governorate of Red Sea, Ras Ghareb City Council, etc.) websites and so the AfDB website to allow for public revision and commenting back, if any.

6. ENVIRONMENTAL & SOCIAL MANAGEMENT

The ESIA includes an Environmental and Social Management Plan (ESMP) which provides a high-level outline plan for managing and monitoring the environmental and social impacts during construction, operation and decommissioning of the Project. The ESMP identifies the mitigation measures which aim to eliminate and/or reduce the potential impact to acceptable levels and monitoring actions to ensure that the identified mitigation measures are implemented.

In addition, the development and implementation of an Environmental and Social Management System (ESMS) during the construction and operation is considered a key requirement under EBRD and IFC requirements. Therefore, IFP also prepared an ESMS Manual which includes the following:

- Identification of the overall structure and outline for the ESMS that will be implemented for the Project during both construction and operation;
- Identification and outline of the key procedures and plans to be developed at a later stage by the Contractors and Operator that will handle the key impacts and risks during construction and operation (e.g. air quality management plan, waste management plan, etc.)
- Identification of an institutional framework to ensure that such plans and procedures are implemented effectively and efficiently. This includes identification of roles and responsibilities, training requirements, monitoring and reporting requirements, and other as applicable;
- Identify approach for periodically auditing entities involved during the construction and operation phase to ensure that ESMS requirements are implemented effectively;
- Identification of a high-level framework for labour management that should be adhered to during the construction and operation phase; and
- Identification of a strategy and commitment in relation to local hiring and community support initiatives.

ESMP: Planning and Construction Phase across Environmental Attributes and Impacts

Table 10: ESMP for the Planning and Construction Phase

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
Landscape and Visual	Visual and landscape impacts due to presence of elements typical of a construction site such as equipment and machinery.	Ensure proper general housekeeping and personnel management measures are implemented which could include: (i) ensure the construction site is left in an orderly state at the end of each work day; (ii) to the greatest extent possible construction machinery, equipment, and vehicles that are not in use should be removed in a timely manner and kept in locations to reduce visual impacts to the area. (iii) Ensure proper storage, collection, and disposal of waste streams generated	Mitigation	Visual inspections	At construction active areas	Daily / Weekly	EPC Contractor	Contractor's cost
Land Use	There are purportedly potential informal land uses onsite which if improperly managed could result in potential conflicts and disputes. This includes the Ghafra system of the Bedouin groups and existing petroleum facilities within the area.	(i) Establish coordination with the Bedouin Groups for inclusion and engagement in employment and procurement opportunities. (ii) Implementation of SEP that includes specific references for engagement and coordination with Bedouin groups. Please refer to SEP for additional details.	Additional requirement	Submit agreement with Bedouin groups	Not applicable	Once before commencement of construction	Developer	Contractor's cost
	Formal land uses include the allocation of land (shared with the proposed project site) under the WDCALR to its members	Cede said land back to NREA in exchange for alternate lands.	Additional requirement	Submit agreement with WDCALR	Not applicable	Before Commencement of Construction	Developer	
	There is a dumpsite located within the Project site that continues to receive discarded wastes from nearby agricultural and livestock activities.	Optimal option – complete removal of the dumpsite and coordination with Wadi Dara Village to ensure local enterprises are aware that the dumpsite has been decommissioned and that its use as a dumpsite can no longer take place.	Mitigation		Construction active areas, maintain site security measures	Before commencement of construction	Developer	
Geology, Hydrology and hydrogeology	Solid waste management	Coordinate with Ras Gharib City Council for the collection of solid waste from the site to the municipal approved dumpsite (the closest dumpsite being Ras Gharib Public Dumpsite)	Mitigation	Submit contract	Not applicable	Once before commencement of construction	EPC Contractor	3000-5000 EGP (the cost of having a spill kit on site).
		Prohibit fly-dumping of any solid waste to the land	Mitigation	Visual inspections	At construction active areas	Daily / weekly		
		Commitment to adherence to the waste hierarchy principle	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's cost
		Distribute appropriate number of properly contained litter bins and containers properly marked as "Municipal Waste"	Mitigation	Visual inspections	At construction active areas	Once before commencement of construction		12,000 EGP (cost of the bins)
		Distribute a sufficient number of properly contained containers clearly marked as "Construction Waste" for the dumping and disposal of construction waste	Mitigation	Visual inspections	At construction active areas	Once before commencement of construction		
		Implement proper housekeeping practices on the construction site at all times	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's cost
		Complete removal of the dumpsite within the Project site to safeguard human, operational and conservation prerogatives	Mitigation	Excavation	Site specific – the location of the dumpsite	Once		
		Maintain records and manifests that indicate volume of waste generated onsite, collected by contractor, and disposed of at the landfill	Mitigation	Submit manifests	Not applicable	Throughout construction period		Contractor's cost

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
	Wastewater management	Coordinate with Ras Gharib Water Company to hire a private contractor for the collection of wastewater from the site to the closest WWTP	Mitigation	Submit contract	Not applicable	Once before commencement of construction	EPC Contractor	5,000-10,000 monthly for private contractor
		Prohibit illegal disposal of wastewater to the land	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's cost
		Ensure that constructed septic tanks during construction and those to be used during operation are well contained and impermeable to prevent leakage of wastewater into soil	Mitigation	Visual inspections	At applicable area	Once before commencement of construction		Contractor's cost
		Ensure that septic tanks are emptied and collected by wastewater contractor at appropriate intervals to avoid overflowing	Mitigation	Visual inspection	At applicable area	Daily/weekly		Contractor's cost
		Maintain records and manifests that indicate volume of wastewater generated onsite, collected by contractor, and disposed of at the WWTP	Mitigation	Submit manifests	Not applicable	Throughout construction period		Contractor's cost
	Hazardous Waste Management	Hire approved private contractor for the collection of hazardous waste from the site to the approved hazardous waste disposal facilities	Mitigation	Submit contract	Not applicable	Once before commencement of construction	EPC Contractor	5,000-10,000 monthly for private contractor
		Ensure that hazardous waste is disposed in a dedicated area that is enclosed, of hard surface, with proper signage and suitable containers as per hazardous waste classifications and that they are labelled for each type of hazardous waste	Mitigation	Visual inspections	At applicable area	Once before commencement of construction		Contractor's cost
		Ensure hazardous waste storage area is equipped with spill kit, fire extinguisher and anti-spillage trays and a hazardous waste inventory is available	Mitigation	Visual inspections	At applicable area	Daily / weekly		Contractor's cost
		Prohibit illegal disposal of hazardous waste to the land	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's cost
		Possibly contaminated water (e.g. runoff from paved areas) must be drained into appropriate facilities (such as sumps and pits). Contaminated drainage must be orderly disposed of as hazardous waste	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's cost
		Ensure that containers are emptied and collected by the contractor at appropriate intervals to prevent overflowing	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's cost
		Maintain records and manifests that indicate volume of hazardous waste generated onsite, collected by contractor, and disposed of at the hazardous waste disposal facilities	Mitigation	Submit manifests	Not applicable	Throughout construction period		Contractor's cost
	Hazardous material management	Ensure that hazardous materials are stored in an area that is of hard impermeable surface, flame-proof, accessible to authorized personnel only, locked when not in use, and prevents incompatible materials from coming in contact with one another, and includes secondary containment systems	Mitigation	Visual inspections	At applicable area	Once before commencement of construction	EPC Contractor	Contractor's cost
		Maintain a register of all hazardous materials used and accompanying MSDS must present at all times. Spilled material should be tracked and accounted for	Mitigation	Visual inspections	At applicable area	Daily / weekly		Contractor's cost

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
		Incorporate dripping pans at machinery, equipment, and areas that are prone to contamination by leakage of hazardous materials (such as oil, fuel, etc.)	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's cost
		Maintenance activities and other activities that pose a risk for hazardous material spillage (such as refuelling) must take place at a suitable location (hard surface) with appropriate measures for trapping spilled material	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's cost
		Ensure that a minimum of 1,000 liters of general-purpose spill absorbent is available at hazardous material storage facility.	Mitigation	Visual inspections	At applicable area	Daily / weekly		Contractor's cost
		If spillage on soil occurs, spill must be immediately contained, cleaned-up, and contaminated soil disposed as hazardous waste	Mitigation	Visual inspection	At applicable area	Upon occurrence		Contractor's cost
	Erosion and runoff management	Avoid executing excavation works under aggressive weather conditions	Mitigation	Visual inspections	At construction active areas	Upon occurrence	EPC Contractor	Contractor's cost
		Place clear markers indicating stockpiling area of excavated materials to restrict equipment and personnel movement, thus limiting the physical disturbance to land and soils in adjacent areas	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's cost
		Erect erosion control barriers around work site during site preparation and construction to prevent silt runoff where applicable such as silt fences, gravel bas berms, fiber rolls, and other.	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's cost
		Return surfaces disturbed during construction to their original (or better) condition to the greatest extent possible	Mitigation	Visual inspections	At construction active areas	Upon occurrence		Contractor's cost
Biodiversity	Construction activities would disturb existing habitats (flora and fauna). In addition, other impacts could be from improper management of the site (e.g. improper conduct and housekeeping practices).	Implement Biodiversity Management Plan (BMP) which is provided as a standalone document.	Mitigation	Refer to BMP	At applicable area	Refer to BMP	EPC Contractor	-
		Undertake a detailed Egyptian Dabb Lizard survey through a biodiversity expert. The survey should focus on all construction activities areas and in particular the Wadi systems where such a species is likely to be located. Should burrows and/or records of this species be identified, relocation activities should be undertaken to nearby similar habitats.	Additional Survey	Submission of report	Prior to construction	Once; before construction	EPC Contractor	-
		Implement proper housekeeping practices on the construction site at all times	Mitigation	Visual inspections	At construction active areas	Daily / weekly	EPC Contractor	-
Birds (avi-fauna)	Construction activities could disturb existing habitats of birds breeding and/or nesting within the Project site.	Implement proper housekeeping practices on the construction site at all times	Mitigation	Visual inspections	At construction active areas	Daily / weekly	EPC Contractor	-
		Submit reporting of procedures and mitigation measures sufficient to achieve No Net Loss (NNL) or even Net Gain (NG) status in accordance with Performance Standards (PS6-IFC/WBG) and Requirements (PR6-EBRD).	Mitigation, Additional Study and Requirement	Submission of Report	Prior to construction	Once – prior to construction	EPC Contractor	-

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
		Regarding Zone 2 of the NREA Concession Area, in which the Project area is defined, submission of an Ornithological Study prior and in order to commence construction	Additional Survey / Study and Requirement	Submission of Report	Prior to construction	Once – prior to construction	EPC Contractor	-
		Removal of dumpsite and / or excavate to cover dumpsites existing contents fully	Additional Precautionary Action	Excavation / Landscaping	At dumpsite located within the Project Area	Prior / during construction	Contractor	-
		Develop a protocol to swiftly report and dispose of any dead or injured wildlife or animals recorded onsite.	Mitigation	Submission of report	Prior to construction	Prior to construction	EPC Contractor	-
Archaeology and Cultural Heritage	Improper management of construction activities could disturb/damage archaeological remains which could be buried in the ground (if any).	As required by the SCA, during excavation activities, SCA must be notified to check if they will provide any observers to oversee the process and ensure that no underground archaeological remains of importance are unearthed and/or disturbed	Mitigation	Submission of evidence of communication with SCA	Not applicable	Prior to construction	EPC Contractor	Contractor's Cost
		If potential archaeological remains in the ground are discovered, appropriate measures for such chance find procedures are implemented. Those mainly require that construction activities be halted and the area fenced along with proper signage, while immediately notifying the Ministry of Tourism and Antiquities/Red Sea and Suez Antiquities Inspection Office. No additional work will be allowed before the Ministry/Inspection Office assesses the found potential archaeological site and grants a clearance to resume the work. Construction activities can continue at other parts of the site if no potential archaeological remains were found. If found, same procedures above apply	Mitigation	Visual inspections and submittal of chance find report	At applicable area	Upon occurrence	EPC Contractor	Contractor's Cost
Air Quality and Noise	Construction activities will likely result in an increased level of dust, particulate matter and pollutant emissions as well as noise which in turn will directly impact ambient air quality and noise levels.	If dust or pollutant emissions were found to be excessive due to construction activities, the source of such emissions should be identified and adequate control measures must be implemented (as identified below)	Mitigation	Visual inspections	At construction active areas and other receptors to include nearby petroleum activities and internal road networks	Upon occurrence	EPC Contractor	Contractor's Cost
		Comply with the Occupational Safety and Health Administration (OSHA) requirements and the Egyptian Codes to ensure that for activities associated with high dust and noise levels, workers are equipped with proper Personal Protective Equipment	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's Cost

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
		Apply basic dust control and suppression measures which could include: (i) regular watering of roads for dust suppression; (ii) proper planning of dust causing activities to take place simultaneously in order to reduce the dust incidents over the construction period; (iii) proper management of stockpiles and excavated material (e.g. watering, containment, covering, bundling); (iv) proper covering of trucks transporting aggregates and fine materials (e.g. through the use of tarpaulin); and (v) adhering to a speed limit of 15km/h for trucks on the construction site.	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's Cost
		Develop a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the construction phase for early detection of issue to avoid unnecessary pollutant and noise emissions	Mitigation	Submission of maintenance program	Not applicable	Monthly		Contractor's Cost
		If noise levels were found to be excessive from construction activities, the source of such excessive noise levels should be identified and adequate control measures must be implemented	Mitigation	Visual inspections	At construction active areas and other receptors to include petroleum storage facilities	Upon occurrence		Contractor's Cost
		Apply adequate general noise suppressing measures. This could include the use of well-maintained mufflers and noise suppressants for high noise generating equipment and machinery, developing a regular maintenance schedule of all vehicles, machinery, and equipment for early detection of issues to avoid unnecessary elevated noise level, etc.	Mitigation	Visual inspections	At construction active areas	Daily / weekly		Contractor's Cost
Infrastructure and Utilities	Traffic and transport management	Develop a Traffic and Transport Plan to ensure transportation process of turbine components does not pose a risk of damage to the existing roads, highways, overpasses whilst ensuring public safety. The Plan must analyze and study the entire route for transportation of the Project components from the port till the Project site. The study must investigate any constraints which need to be considered along the highways leading to the Project site such as bridges, overhead utility cables, slants in roads, etc. and identify accommodations which need to be taken into account.	Additional study	Submission of Traffic and Transport Plan and approval from local authorities	Not applicable	Once before commencement of construction	EPC Contractor	Contractor's Cost
	Civil and Military Aviation	Establish coordination with the relevant entity to provide information on the Project (to include location and specifications of turbines in specific) and include any specific requirements to be considered as part of the detailed design to include setback distances if required (e.g. from radar systems if applicable) and navigational safety requirements (e.g. navigational lights, blade paintings, etc.)	Additional requirement	Submit of formal non-objection letter (or similar) with relevant entity	Not applicable	Once before commencement of construction	Developer	-

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
	Improper planning and design of project could affect petroleum facilities	Establish coordination via NREA with the General Petroleum Company's head office in Cairo to discuss and determine any specific requirements to be taken into account for the detailed design of the Project as well as coordination agreement requirement during the construction and operation phase (e.g. avoidance of such areas, buffer distances to be considered, etc.)	Additional requirement	Coordination activities are initiated no less than six (6) months prior to construction. Submit formal communication letter (or similar) with relevant entity	Not applicable	Once before commencement of construction	Developer	-
	Water resources management	Coordinate with the Ras Ghareb Water Company to sector the water requirements of the Project	Additional requirement	Submit formal communication letter (or similar) with Ras Ghareb Water Company	Not applicable	Once before commencement of construction	EPC Contractor	Contractor's Cost
	Waste utilities	Undertake the following: (i) coordinate with the Ras Ghareb Water Company and obtain list of authorized contractors for collection of wastewater from the site; (ii) coordinate with the Ras Gharib City Council to hire a competent private contractor for the collection of solid waste from the site; and (iii) obtain list of authorized contractors for collection of hazardous waste from the site	Additional requirement	Submit formal communication letter with relevant entities	Not applicable	Once before commencement of construction	EPC Contractor	Contractor's Cost
	Telecommunication and TV/Radio management	Establish coordination via NREA/EETC with relevant entity and other applicable local agencies to provide information on the Project (to include location and specifications of turbines in specific) and include any specific requirements to be considered as part of the detailed design to include setback distances if required for telecommunication, radio and TV infrastructure (e.g. from LoS connections)	Additional requirement	Coordination activities are initiated no less than six (6) months prior to construction. Submit formal communication letter with relevant entities	Not applicable	Once before commencement of construction	Developer	Developer
	Nearby Wind Farms	Further follow/communication with NREA to ensure if buffer distance of the Project from other nearby wind farm projects is considered sufficient and appropriate from a technical perspective	Mitigation	Submit formal communication letter with relevant entities	Not applicable	Once before commencement of construction	Developer	Developer
Occupational Health and Safety	There will be some generic risks to workers health and safety from working on construction sites, as it increases the risk of injury or death due to accidents.	Develop and submit an Occupational Health and Safety Plan (OHSP) that is project and site specific to ensure the health and safety of all personnel in order to concur and maintain a smooth and proper progress of work at the site and prevent accident which may injure personnel or damage property.	Additional study	Submit OHSP plan	Not applicable	Once before commencement of construction	EPC Contractor	Contractor's Cost
		Develop and submit an Emergency preparedness and Response Plan that is project and site specific and account for all potential emergency situations onsite to ensure the health and safety of all personnel and property onsite.	Additional study	Submit EPRP	Not applicable	Once before commencement of construction	EPC Contractor	Contractor's Cost

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
Human Rights	Inappropriate management of the workforce during both the construction and operation phase could entail several human right risks and violations by employing entities such as the EPC Contractor and Project Operator. This could include but not limited to engaging child workers, confiscation of passports of foreign workers, unsuitable working hours, and other.	(i) Providing reasonable working conditions and terms of employment to include but not limited to contract management, working hours, salaries/wages, annual and medical leaves, bereavement leaves, accommodation, etc. (ii) Recognizing workers' rights to form and to join workers' organizations and to bargain collectively (iii) Prohibition of child labour within the workforce (iv) Overall management of young workers within the labour force (v) Prohibition of forced labour (vi) Non-discrimination throughout the entire work cycle in all its forms (vii) Providing equal opportunities for all throughout procurement and employment opportunities including women groups (viii) Overall management of daily workers, migrant workers and third-party workers	Mitigation	(i) Undertake monthly inspections during construction and quarterly during operation against the developed HR procedure (ii) Submission of HR inspection report that identifies any corrective measures undertaken	At applicable area	Monthly	EPC Contractor	Contractor's Cost
Public health and safety	Relatively large worker influx could result in H&S issues such as risk of diseases, inappropriate code of conduct, social vices, etc.	Submit a worker influx plan which takes into account the following: (i) medical examination program for workers; (ii) procedures to maintain hygienic conditions onsite; (iii) code of conduct for workers; (iv) induction training and awareness requirements for risk of diseases, etc; (v) consider impacts from workers migration into nearby communities including pressure on rental accommodations and infrastructures	Additional study	Submit worker influx plan	Not applicable	Once before commencement of construction	EPC Contractor	Contractor's Cost
	Inappropriate management of security issues and incidents by security personnel towards local communities could result in resentment, distrust and escalation of events	Prepare a Security Management Plan that identifies appropriate measures for hiring, rules of conduct, training, equipping, and monitoring of security personnel to control and manage such issues	Additional study	Submit security management plan	Not applicable	Once before commencement of construction	EPC Contractor	Contractor's Cost
Socio-economics	The Project is expected at a minimum to provide job opportunities for local communities. This, to some extent, could contribute to enhancing the living environment for its inhabitants, elevate their standards of living, and bring social and economic prosperity	Local Recruitment Procedure: the procedure must identify the number of job opportunities targeted for local communities to include skilled and unskilled workers. Such job opportunities shall also take into account employment of local communities in the area around the project to include fresh graduate engineers, technicians, laborers, etc. In addition, the procedure must include details on how job opportunities will be announced as well as a selection process that is fair and transparent and provides equal opportunities for all including females.	Recommendation	Regular reporting on outcomes of Program implementation	Not applicable	Continuous	Project Developer/EPC Contractors	Contractor's Cost

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
		Local Procurement Procedure: the procedure must identify the procurement opportunities targeted for local communities to include for example local subcontractors, local supplies and services, cleaning services, etc. In addition, the procedure must include details on how procurement opportunities will be announced as well as a selection process that is fair and transparent and provides equal opportunities for all. Social Responsibility Program: it is recommended that the Developer implement a social responsibility program which aims to benefit the local communities to the greatest extent possible. In this case, a structured approach must be developed which must identify priority development projects which could benefit local communities (e.g. based on a needs assessment if available). Based on that the social responsibility program can prioritise projects for local communities based on available budget, company vision, timeline for implementation as well as other factors.						

ESMP: Operational Phase across Environmental Attributes and Impacts

Table 11: ESMP for the Operation Phase

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
Geology, Hydrology and hydrogeology	Solid waste management	Coordinate with Ras Gharib City Council for the collection of solid waste from the site to the municipal approved dumpsite (the closest dumpsite being Ras Gharib Public Dumpsite)	Mitigation	Submit contract	Not applicable	Once before commencement of operation	Project Operator	Should be included in operator budget
		Prohibit fly-dumping of any solid waste to the land	Mitigation	Visual inspections	At operational active areas	Daily / weekly		
		Distribute appropriate number of properly contained litter bins and containers properly marked as "Municipal Waste"	Mitigation	Visual inspections	At operational active areas	Once before commencement of operation		
		Implement proper housekeeping practices onsite at all times	Mitigation	Visual inspections	At operational active areas	Daily / weekly		
		Maintain records and manifests that indicate volume of waste generated onsite, collected by contractor, and disposed of at the landfill	Mitigation	Submit manifests	Not applicable	Throughout operational period		
	Wastewater management	Coordinate with Ras Gharib Water Company to hire a private contractor for the collection of wastewater from the site to the closest WWTP	Mitigation	Submit contract	Not applicable	Once before commencement of operation	Project Operator	Should be included in operator budget
		Prohibit illegal disposal of wastewater to the land	Mitigation	Visual inspections	At operational active areas	Daily / weekly		
		Ensure that septic tanks are emptied and collected by wastewater contractor at appropriate intervals to avoid overflowing	Mitigation	Visual inspection	At applicable area	Daily/weekly		

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
		Maintain records and manifests that indicate volume of wastewater generated onsite, collected by contractor, and disposed of at the WWTP	Mitigation	Submit manifests	Not applicable	Throughout operational period		
	Hazardous waste management	Hire approved private contractor for the collection of hazardous waste from the site to the approved hazardous waste disposal facilities	Mitigation	Submit contract	Not applicable	Once before commencement of operation	Project Operator	Should be included in operator budget
		Ensure that hazardous waste is disposed in a dedicated area that is enclosed, of hard surface, with proper signage and suitable containers as per hazardous waste classifications and that they are labelled for each type of hazardous waste	Mitigation	Visual inspections	At applicable area	Once before commencement of operation		
		Ensure hazardous waste storage area is equipped with spill kit, fire extinguisher and anti-spillage trays and a hazardous waste inventory is available	Mitigation	Visual inspections	At applicable area	Daily / weekly		
		Prohibit illegal disposal of hazardous waste to the land	Mitigation	Visual inspections	At operational active areas	Daily / weekly		
		Possibly contaminated water (e.g. runoff from paved areas) must be drained into appropriate facilities (such as sumps and pits). Contaminated drainage must be orderly disposed of as hazardous waste	Mitigation	Visual inspections	At operational active areas	Daily / weekly		
		Ensure that containers are emptied and collected by the contractor at appropriate intervals to prevent overflowing	Mitigation	Visual inspections	At operational active areas	Daily / weekly		
		Maintain records and manifests that indicate volume of hazardous waste generated onsite, collected by contractor, and disposed of at the hazardous waste disposal facilities	Mitigation	Submit manifests	Not applicable	Throughout operational period		
	Hazardous material management	Ensure that hazardous materials are stored in an area that is of hard impermeable surface, flame-proof, accessible to authorized personnel only, locked when not in use, and prevents incompatible materials from coming in contact with one another	Mitigation	Visual inspections	At applicable area	Once before commencement of operation	Project Operator	Should be included in operator budget
		Maintain a register of all hazardous materials used and accompanying MSDS must present at all times. Spilled material should be tracked and accounted for	Mitigation	Visual inspections	At applicable area	Daily / weekly		
		Incorporate dripping pans at machinery, equipment, and areas that are prone to contamination by leakage of hazardous materials (such as oil, fuel, etc.)	Mitigation	Visual inspections	At operational active areas	Daily / weekly		
		Maintenance activities and other activities that pose a risk for hazardous material spillage (such as refuelling) must take place at a suitable location (hard surface) with appropriate measures for trapping spilled material	Mitigation	Visual inspections	At operational active areas	Daily / weekly		
		Ensure that a minimum of 1,000 litters of general-purpose spill absorbent is available at hazardous material storage facility.	Mitigation	Visual inspections	At applicable area	Daily / weekly		
		If spillage on soil occurs, spill must be immediately contained, cleaned-up, and contaminated soil disposed as hazardous waste	Mitigation	Visual inspection	At applicable area	Upon occurrence		
Biodiversity	Improper management of the site could disturb existing habitats (e.g. improper conduct and housekeeping practices).	Implement proper management measures to prevent damage to the biodiversity of the site.	Mitigation	Inspection	At applicable area	Continuous	Project Operator	Should be included in operator budget
Birds (avi-fauna)		Avi-Fauna Monitoring and On-Demand Turbine Shutdown	Mitigation	Submission of report	At operational active areas	Continuous	Consultant	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
	Wind turbines are associated with impacts on birds from risks of strikes and collision on both migratory soaring birds and resident soaring birds in the area. Generally, such impacts depend on several factors but could affect the population levels of certain species especially those with international/national critical conservation status.	Avi-Fauna Carcass Search during Operation	Additional requirement	Submission of report	At operational active areas	Continuous		
		Carcass Search Surveys	Additional requirement	Submission of report	At operational active areas	Continuous		
Bats	The potential impacts from the Project during operation are mainly related to risk of bat strikes and collisions with rotors of the operating wind turbines.	Undertake at height bat acoustic surveys for one (1) year during first or second year of operations. Such acoustic surveys will be done at the met masts and should be undertaken by a third-party entity with experience in bat assessments and studies.	Mitigation	Submission of report	At operational active areas	Once during operation	Project Operator	
		Carcass Search Surveys	Mitigation	Submission of report	At operational active areas	Continuous	Consultant	
Infrastructure and Utilities	Water resources management	Coordinate with the Ras Gharib Water Company to sector the water requirements of the Project.	Additional requirement	Submit formal communication letter (or similar) with Ras Gharib Water Company	Not applicable	Once before commencement of construction	Project Operator	Should be included in operator budget
	Waste utilities	Undertake the following: (i) coordinate with the Ras Gharib Water Company and obtain list of authorized contractors for collection of wastewater from the site; (ii) coordinate with the Ras Gharib City Council to hire a competent private contractor for the collection of solid waste from the site; and (iii) obtain list of authorized contractors for collection of hazardous waste from the site	Additional requirement	Submit formal communication letter with relevant entities	Not applicable	Once before commencement of construction	Project Operator	
Occupational Health and Safety	There will be some generic risks to workers health and safety from working on construction sites, as it increases the risk of injury or death due to accidents.	Develop and submit an Occupational Health and Safety Plan (OHSP) that is project and site specific to ensure the health and safety of all personnel in order to concur and maintain a smooth and proper progress of work at the site and prevent accident which may injure personnel or damage property.	Additional study	Submit OHSP plan	Not applicable	Once before commencement of operation	Project Operator	Should be included in operator budget
Human Rights	Inappropriate management of the workforce during the construction phase could entail several human right risks and violations by employing entities such as the EPC Contractor and Project Operator. This could include but not limited to engaging child workers, confiscation of passports of foreign workers, unsuitable working hours, and other.	Providing reasonable working conditions and terms of employment to include but not limited to contract management, working hours, salaries/wages, annual and medical leaves, bereavement leaves, accommodation, etc.	Mitigation	Submit HR inspection report identifying corrective measures undertaken	Not applicable	Monthly	EPC Contractor	Should be included in operator budget
		Recognizing workers' rights to form and to join workers' organizations and to bargain collectively	Mitigation	Submit HR inspection report that identifies any corrective measures undertaken	Not applicable	Monthly		
		Prohibition of child labour within the workforce	Mitigation	Submit HR inspection report that identifies any corrective measures undertaken	Not applicable	Monthly		
		Overall management of young workers within the labour force	Mitigation	Submit HR inspection report that identifies any corrective measures undertaken	Not applicable	Monthly		
		Prohibition of forced labour	Mitigation	Submit HR inspection report that identifies any corrective measures undertaken	Not applicable	Monthly		

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity	Cost
		Non-discrimination throughout the entire work cycle in all its forms	Mitigation	Submit HR inspection report that identifies any corrective measures undertaken	Not applicable	Monthly		
		Providing equal opportunities for all throughout procurement and employment opportunities including women groups	Mitigation	Submit HR inspection report that identifies any corrective measures undertaken	Not applicable	Monthly		
		Overall management of daily workers, migrant workers and third-party workers	Mitigation	Submit HR inspection report that identifies any corrective measures undertaken	Not applicable	Monthly		
Public Health and Safety	Public access of unauthorized personnel to the various Project components.	A Security Risk Assessment should be developed for the Wind Farm Project and which takes into account the following: (i) each turbine to be fitted with locked doors to prevent unauthorized access to the turbines; (ii) substation area to be completely fenced with concrete walls to prevent unauthorized access; (iii) onsite guards; (iv) post informative signs on the turbines and substation about public safety hazards and emergency contact information, and other as applicable.	Additional study	Submit Security Risk Assessment	Not applicable	Once before commencement of operation	Project Operator	
	Inappropriate management of security issues and incidents by security personnel towards local communities could result in resentment, distrust and escalation of events	Prepare a Security Management Plan that identifies appropriate measures for hiring, rules of conduct, training, equipping, and monitoring of security personnel to control and manage such issues	Additional study	Submit security management plan	Not applicable	Once before commencement of operation	Project Operator	
	Blade or tower glint can impact nearby receptors in the area	Consideration should be given to the use of non-reflective finishes to ensure potential impacts are not significant	Mitigation	Visual inspection	Turbines	Once before commencement of operation	Project Operator	
Socio-economics	The Project is expected at a minimum to provide job opportunities for local communities. This, to some extent, could contribute to enhancing the living environment for its inhabitants, elevate their standards of living, and bring social and economic prosperity	Local Recruitment Procedure: the procedure must identify the number of job opportunities targeted for local communities to include skilled and unskilled workers. Such job opportunities shall also take into account employment of local communities in the area around the project to include fresh graduate engineers, technicians, laborers, etc. In addition, the procedure must include details on how job opportunities will be announced as well as a selection process that is fair and transparent and provides equal opportunities for all including females. Local Procurement Procedure: the procedure must identify the procurement opportunities targeted for local communities to include for example local subcontractors, local supplies and services, cleaning services, etc. In addition, the procedure must include details on how procurement opportunities will be announced as well as a selection process that is fair and transparent and provides equal opportunities for all. Social Responsibility Program: it is recommended that the Developer implement a social responsibility program which aims to benefit the local communities to the greatest extent possible. In this case, a structured approach must be developed which must identify priority development projects which could benefit local communities (e.g. based on a needs assessment if available). Based on that the social responsibility program can prioritize projects for local communities based on available budget, company vision, timeline for implementation as well as other factors.	Recommendation	Regular reporting on outcomes of Program implementation	Not applicable	Continuous	Project Developer/ Operator	

7. ASSOCIATED FACILITIES

It is important to note that the Project also includes an electricity transmission line. The electricity generated from the Project will be connected from the substation (discussed above) to the National Grid through an Overhead Transmission Line (OHTL) that will be developed by Egyptian Electricity Transmission Company (EETC).

EETC is considered a governmental entity. Developer will liaise and interact with the EETC to ensure that that the OHTL is developed in line with IFI E&S requirements.

EETC will be fully responsible for planning, developing, constructing, commissioning and operating the OHTL. The proposed OHTL is approximately 47 km long and will be a double circuit line (i.e. 2 lines running next to each other) designed to connect the wind farm to the national grid.



Figure 16: Location of OHTL Route

The main component of the OHTL is the transmission towers. The tower will have a height of around 67m. In addition, there will be one (1) tower approximately every 500m. Therefore, a total of 188 towers are expected since it will be a double circuit line (i.e. 2 lines running next to each other).

An E&S assessment was undertaken for the OHTL that included a baseline and impact assessment. The assessment concludes that key impacts are biodiversity related and mainly on avifauna.

Impacts on Migratory Bird Species (MSBs) have been considered using Post Construction Fatality Monitoring (PCFM) data from other windfarms in the area. Using PCFM data, three assessments were undertaken: predicted number of deaths per year, impact of diverters on collisions and a cumulative risk assessment. Through these assessments it has been recommended that collisions with OHTLs could result in long-term negative impacts on MSBs through direct mortality and injury. Such impacts could be irreversible, will be between low to high magnitude and as such significance will vary from minor to major

depending on the receptor species being affected. Mitigation measures including the use of diverters and the potential to stagger OHTL towers has been recommended to mitigate these impacts.

Baseline surveys completed in August 2024 noted one PBF, Egyptian Spiny-Tailed Lizard (*Uromastix aegyptia*). There were 19 burrows recorded along the proposed OHTL in Plot 1 and none in Plot 2. Unmitigated impacts across the whole project could potentially be medium-term and irreversible (e.g. loss of breeding habitat and mortality). Translocation has been recommended for this species pre-construction and if present in Plot 2 this will take place.

Other impacts from the OHTL were not considered significant and include the following:

- There will be routine impacts during construction that are expected to be managed through routine mitigations as those identified for the windfarm component. This includes issues such as generation of dust and noise, waste management, hazardous material management, occupational health and safety, etc.
- Site survey did not indicate any archeology and/or cultural heritage sites within the OHTL route therefore no impacts are anticipated. Chance find procedures are expected to be implemented in the case any sites are unearthed during excavation activities.
- No key land uses were recorded to include physical and/or economical activities. Therefore there are no impacts related to physical or economical displacement. In addition, lands are all under governmental ownership and therefore will not be subject to a land acquisition process.
- Several infrastructure and utility elements were recorded within or near the OHTL to include roads, highways, other electricity lines, oil/gas pipelines, etc. Coordination and engagement with entities managing such infrastructure and utility elements is required as part of the detailed design to ensure all requirements are taken into account and considered.