

Environmental Safeguard Monitoring Report

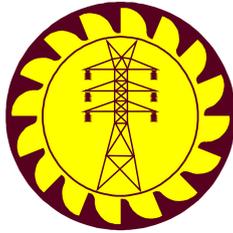
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Sri Lanka: Wind Power Generation Project

Prepared by the Ceylon Electricity Board for the Government of Sri Lanka and the Asian Development Bank.

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Environmental Safeguard Monitoring Report

ADB Loan 3585 - SRI

Reporting Period {From October 01, 2018 to December 31, 2018}
Date {January 17, 2019}

Wind Power Generation Project

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Abbreviations

ADB	–	Asian Development Bank
BMP	–	Biodiversity Management Plan
CCD	–	Department of Coast Conservation
CDM	–	Clean Development Mechanisms
CEA	–	Central Environment Authority, Government of Sri Lanka
CEB	–	Ceylon Electricity Board
CMS	–	Construction method statement
EA	–	Executing Agency
EIA	–	Environmental Impact Assessment
EMoP	–	Environmental Monitoring Plan
EMP	–	Environmental Management Plan
GRC	–	Grievance Redress Committee
GRM	–	Grievance Redress Mechanism
IA	–	Implementing Agency
IEE	–	Initial Environmental Examination
MOPE	–	Ministry of Power and Energy. Government of Sri Lanka
MWPP	–	Mannar Wind Power Project
PMU	–	Project Management Unit
RP	–	Resettlement Plan
SLSEA	–	Sri Lanka Sustainable Energy Authority
WECS	–	Wind Energy conversion systems
WTG	–	Wind Turbine Generator

WEIGHTS AND MEASURES

ha (hectare)	–	Unit of area
km (kilometer)	–	1,000 meters
kV	–	kilovolt (1,000 volts)
kW	–	kilowatt (1,000 watts)
MVA	–	Megavolt-ampere
MW	–	Mega Watt

NOTE{S}

In this report, "\$" refers to US dollars.

"SLRs" refers to Sri Lankan rupees

Executive Summary

As per the Sri Lanka's environment legislations an IEE had been recommended by the scoping committee chaired by CCD. However, ADB categorized the project as "Category A" in terms of environment since the project site lies in close proximity of the three protected areas (namely Vankalai Sanctuary, Adams Bridge Marine National Park and Vidathalathivu nature reserve). Accordingly, an Environment Impact Assessment (EIA) was carried out by CEB and ensuring any environmental mitigation measures during construction and operation stages of the project and its associated facilities.

The Environmental Impact Assessment (May 2017) has thoroughly revealed all the relevant National Environmental and other international Legislations applicable to the project and recommended several mitigation measures. Accordingly, a concise Environmental Management Plan (EMP), and Environmental Monitoring Plan (EMoP), are anticipated which will provide guidelines for detailed Construction Method Statement are being prepared by the EPC contractor.

Thus the CMS ensure that proper construction practices such as the usage of minimal areas required for constructions, provision of drainage systems-with silt traps where necessary, non- obstruction of existing drainage paths/flow in water bodies-with culverts are provided where necessary and restoration of the affected area as much as possible after the construction phase are adopted broadly as impact mitigation measures.

The site clearing for the demarcation of the foot print selected for the wind turbine has been started by the CEB. This will ease the surveying work that will follow the legislative requirements of land acquisition. Clearing foot prints were marked and followed with a GPS monitoring of the boundary stone and commercially valuable or ecologically important trees and shrubs were retained where ever possible. Thus, Best practices and close supervision have always been adopting by the CEB in the process.

The contract agreement for construction of the 100MW semi dispatchable wind farm along the southern coast of Mannar island has been signed between CEB and M/s Vestas Asia Pacific A/S on November 28, 2018.

A Dilapidation survey has been carried out by the EPC contractor with the participation of relevant stakeholders such as Mannar Provincial council, Road Development Department (RDD) and Road Development Authority (RDA) and Divisional secretary-Mannar.

Also, a meeting was held at the Mannar Provincial council to enlighten the newly appointed council members of Mannar Provincial council on project and to get involve them in future activities of public consultations. Several environmental and social quires were raised and clarified by CEB during this meeting.

1.0 Introduction

ADB is extending a loan assistance to Sri Lanka’s power sector for Semi dispatchable 100 MW Mannar Wind Power Project with a focus to identify the development of non-conventional renewable energy (wind and solar) parks/ projects and overall improvement of network security & reliability.

The project would contribute to enhance NCRE penetration of Sri Lanka’s electrical Energy supply. 370.6 GWh/per year from the Mannar Wind farm will support to avoid electricity generation at high cost conventional thermal power plants by an equal amount.

The scope of Wind Power Generation Project consists of following:

	Activity	Fund Allocations (MUSD)
1	Construction of 100 MW wind farm	196.8
2	System reactive power management improvement	19.1
3	Capacity building of CEB in project engineering design and supervision	1.0

1.1 Brief Project Description

Mannar Wind Power project is an electrical power generation project, which utilize kinetic energy in the wind to produce electrical energy. Ceylon Electricity Board is to build and operate a semi- dispatchable wind farm of 100 MW capacity as the first phase of harnessing the available wind electric potential in the Mannar region. The state-of-the-art wind energy conversion systems (WECS) would be selected for the proposed wind farm to generate clean electrical energy in a sustainable manner.

The proposed Wind Power Park will be located in the southern part of Mannar Island from Thoddaveli to a length of about 12 km along the coast. 33 turbines locations in the first row adjacent to the shore line and 6 turbines in the second row which are located at a distance about 1 km from the shore have already been secured.

The proposed wind farm has excluded the areas coming under the Adam’s Bridge Marine National Park declared in 2015. The nearest village is about 800 m away from the second row of wind turbines. Several Navy camps/ Navy observation points, boat landing sites, *Ma-de I* hauling sites, and fishermen vaadi/camps (seasonal) and a tourist hotel are found within the wind farm block. Access roads to the Navy camps, fishermen camps and fish landing sites from Mannar- Thalaimannar main road, and roads parallel to the coastline are also found within the wind farm.

1.2 Project Progress Status

The project progress is appraised considering several factors such as Legislative Approvals & Permits, allocation of competent PMU Staff, formation of EPC Contract, Securing Lands identified for project structures, project implementation and safeguards. A summary of the progress of important milestones of the project given in the following table.

Description	Status	Reference Date
1. Construction of 100 MW wind farm		
a. Legislative Approvals & Permits	1. Project Environmental approval (IEE) as per Sri Lanka's Statutory Requirements	30.06.2016
	2. Energy Permit by SLSEA	25.07.2016
	3. Project Environmental approval (EIA) as per ADB Requirements	18.09.2017
b. Project Funding	1. ADB Loan Agreement & Guarantee Agreement	22.11.2017
	2. ADB Loan Effectiveness	22.02.2018
c. Competent PMU staff for Safeguard matters.	An Environmental & Social safeguard unit within PMU is in operation for timely attending the issues caused by the project activities	27.06.2016
d. EPC Contract	Contract Agreement has been signed with Vestas Asia Pacific Ltd.	28.11.2018
	Contract Commencement	Awaiting
e. Consultancy Contract	7. Procurement of consultants for design review & supervision support for construction aspects. Signing of contract agreement	pending
	8. Procurement of consultancy service for registration of MWPP under the CDM of UN Framework Convention on Climate Change.	28.03.2018 In progress
f. Securing Lands	9. Securing land rights - 90%. Completed Besides, the lands that were taken over the possession have been marked with boundary stones of CEB	As at 31.12.2018
g. Project Implementation	Hydrological Study	21.01.2017 to 25.03.2017
	Dilapidation survey at site	12.12.2018
	Geological Investigations and Soil Testing Project Preliminaries	Awaiting
h. Safeguards	Bird Survey for entire Mannar Island and Avian Critical Habitat Assessment.	Jan 2014 to March 2017
	Avian Collision Modelling & Risk Assessment and capacity building/training for field staff.	Apr 2017 to Jan 2018
	Pre- Construction Avian Monitoring	Feb 2018 to Feb 2019
2. Installation of 100 MVA reactive reactors at 220 kV level at Anuradhapura & Mannar Grid substations		
	The package scope is to install/upgrade the electrical equipment inside the existing GSS at Anuradhapura and the proposed new GSS at Nadukuda under TRANCH 2. This package work is implemented under separate PMU-Transmission Construction Projects Branch within CEB.	
3. Capacity building of CEB in project engineering design and supervision		
Training of PMU Staff	3 nos. of training modules namely Wind-Pro Design Software, Wind Energy for Engineers and Operation & Maintenance of Wind Farms have been conducted for engineers attached to PMU	June 2017 & Jan 2018.

1.3 Summary of the Project Implementation Schedule

	Activity	Duration (days)	Start	Finish	Status
1	Project Preliminaries and Approvals	1010	08.01.2015	18.09.2017	Completed
2	Bidding Procedures	137	14.03.18	16.08.18	
3	Cabinet Approval for Award	25	17.08.2018	20.09.2018	Completed
4	Contractual & Financial Proceedings	44	25.09.2018	28.11.2018	Completed
5	Securing lands for Project Structures	561	08.07.2016	31.08.2018	90% Completed*
6	Project Implementation				Upcoming
	Preliminaries	19	23.11.2018	19.12.2018	
	Detail Designs	120	20.12.2018	05.06.2019	
	Construction Manufacture & Transport	270	14.02.2019	26.02.2020	
	Erection & Commissioning	207	15.08.2019	29.05.2020	
7	Project Completion	127	01.06.2020	24.11.2020	
8	Defects Liability Period	522	25.11.2020	24.11.2022	

* Note 1: the balance 10% includes 6 lands for Wind Turbine Generator (WTG) locations and 1 land for staff accommodation. Out of all, 3 blocks which were previously negotiated and almost finalized for purchasing. But during the check survey carried out prior to transfer deed signing it was revealed that there were major defects in land plans. Thus initiated for acquisitions in Oct 2018. Objections were raised for the other blocks subsequently inquired and sorted out in Feb 2019 and awaiting handing over now.

Detail Project Implementation Schedule is attached under item 06 of this report.

2.0 Compliance to National Regulations

The Environmental Impact Assessment (2017, May) has thoroughly revealed all the relevant Sri Lankan Environmental and other Legislations applicable to the project and recommended all the mitigation measures. Accordingly, a concise Environmental Management Plan (EMP), and Environmental Monitoring Plan (EMoP), has been prepared, and a detailed Construction Method Statement has to be prepared by the contractor, who is to be selected through the ongoing bidding process.

The relevant Acts and Legislations to the project is given in following Table.

Sector	Name of the Act	Relevant Regulations	Compliance
Environment	National Environment Act No. 47 of 1980.	EIA Regulations Water quality standards	Yes
	National Environment Act (Act No. 56 of 1988) Part IV 'C'	Ambient air quality standards National Environmental (Noise Control) Regulations No. 1 of 1996	Yes
	National Environmental (Amendment) Act No. 53 of 2000		Yes
	Fauna & Flora (Protection) Ordinance Act No. 49 of 1993 & its amendments	Any development activity within one mile from the boundary of any national reserve is required to be subjected to EIA/IEE, and written approval from the Director General of Department of Wildlife Conservation prior to project implementation	Yes

	Soil Conservation Act No. 25 of 1951 subsequent amendments: 25 of 1951; 29 of 1953; 57 of 1981; 24 of 1996	Soil conservation guidelines	Yes
	Felling of Trees (Control) Act No. 9 of 1951 and its amendments	Permits should be obtained for felling of Jack, Bread Fruit and female Palmyra trees	Yes
	Sri Lanka Coast Conservation Act	Issuance of Development Permit for Any development activity within the jurisdiction area of CCD.	Yes
Energy including Non Conventional Renewable Energy (NCRE)	Sri Lanka Electricity Act No 20 of 2009 & Amendments.	Generation of electricity	Yes
	Ceylon Electricity Board Act		
	Public Utilities Commission of Sri Lanka Act No 35 of 2002		
	Sri Lanka Sustainable Energy Authority Act No. 35, 2007		
Construction of associated facilities such as buildings	Pradeshiya Sabha Act No. 15 of 1987 URBAN DEVELOPMENT AUTHORITY. Law. No. 41 of 1978	Regulations pertaining to set back limits, street line, assessment	Yes
Other	Sri Lanka Ma-dal Fisheries Act		

The wind farm area is falling within the coastal zone and a gazetted Beach seine area. Other than this the wind farm area is not falling within any other relevant jurisdiction areas or protected areas.

The project has been gazetted as Energy Development Area by Sri Lanka Sustainable Energy Authority and has secured all necessary clearances/permits from relevant state agencies and/or local authority approvals, such as Development Permit from Coast Conservation Department. Preliminary Project Clearance (PPC) from Urban Development Authority has already been secured for construction of civil structures and for Solid waste disposal Mannar Provincial Council is required to be obtained once the detail designs are finalized.

Thus, it is very clear that the project is fully compliance with the National laws and regulations.

3.0 Compliance to Environmental Covenants from ADB Loan Agreement

The schedule 5 paragraph 2 of the Loan agreement explains the environmental covenants that has to be compliance with the project activities. Accordingly, CEB shall ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities Comply with;

- (a) All applicable laws and regulations of the Country relating to environment, health, and safety;
- (b) Environmental Safeguards
- (c) Requirements set forth in the EIA, the EMP, the BMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.

The following table summarizes the specific applicable Environmental Covenants of the ADB Loan Agreement 3585 SRI and the actions taken by CEB to fulfill the same.

3.1 Progress on Compliance to the Environmental Covenants

No	Activity	Remarks
1	Additional Pre-construction (bird) survey	Bird monitoring programme for the development should include continuation of pre-construction base-line surveys for a further year to provide more detailed information about bird activity within the wind farm site. Hence, A pre-construction (bird) survey are being continued for one-year period until February 2019 to cover full migrating /breeding season by the National consultant (Annex 1) .
2	Photographic Records of the Birds within Wind Farm	The PMU continued the biweekly photographic records of the birds in the vicinity of wind farm area. The records are being continued during the migration period and non-migration period (Annex 2) .**
3	Consultancy Procurement for Recruitment of a Local Consultancy firm to Monitor the Implementation of BMP and EMP	The RFP has been called and a consultancy firm has been selected for Monitoring the Implementation of BMP and EMP (Annex 3) . Signing of Consultancy Agreement is pending till the appointment of CEB Board.
4	Photographic records during the site clearance for the wind turbine	A complete surveillance photographic records were kept during the land cleaning process (Annex 4) .

** Note 2: All the recorded birds were found along the beach area. Approximately 200~250 meters away from the closest WTG location.

4.0 Compliance to Environmental Management Plan

The Environmental Management Plan (EMP) has been prepared for project that discusses the anticipated impacts, monitoring requirements, and development of mitigation measures with respect to the pre-construction, construction, and operation & maintenance stages. Annexures 3, 4, and 5 of the EIA report which elaborates on the details of the mitigation measures to be implemented the construction method statement to be followed and the monitoring requirements.

Detailed, site-specific mitigation measures and monitoring plans will be developed and implemented during the project implementation phase.

Project Activity	Potential Environmental Impact	Mitigation Action	Location	Time Period	Institutional Responsibility	Compliance
Pre-construction						
Temporary use of lands	Impact to the existing environment	Selection of lands adhering to local laws and regulations and in close consultation with LAs Construction facilities should be	Mannar Island and/or wind farm project area	Construction	CEB Vestas Asia Pacific A/S	Complied; There are no intended temporary use of lands; If required by the contractor, Vestas the land will be used in

Project Activity	Potential Environmental Impact	Mitigation Action	Location	Time Period	Institutional Responsibility	Compliance
		placed at least 100 m away from water bodies, natural flow paths, important ecological habitats and residential areas.				compliance with the CMS.
Wind turbine generator location and design	Noise generation Exposure to noise, Nuisance to neighboring properties	Wind turbine layout has been finalized to ensure noise will not be a nuisance (i.e. less than 55dBA LAeq daytime and less than 45dBA LAeq nighttime at nearest receptor).	Mannar Island and/or wind farm project area	Procurement, Detail Design stage and Implementation stages.	CEB Vestas Asia Pacific A/S.	Complied; during detailed design micro siting of the turbine locations are already finalized in compliance with this Noise level criteria.
	Disturbance to the adjacent lands and the people due to cut and fill operations	Maintain clearance, construction of retaining structures, minimize cut and fill operations adjoining to the dwellings			CEB Vestas Asia Pacific A/S	Complied. CEB will ensure that the best construction practices are followed by the contractor at all times.
Location of Wind turbines and their alignment on coast and design	Exposure to safety related risks	Setback of dwellings to wind turbine location designed in accordance with permitted level of noise, safety and the regulation supervision at sites.	Mannar Island and/or wind farm project area	Design stage and procurement	CEB	Complied; Each Turbine location were personally visited extensively studied by the project technical staff before finalizing the same to ensure fulfilling this requirement.

Project Activity	Potential Environmental Impact	Mitigation Action	Location	Time Period	Institutional Responsibility	Compliance
	<p>Impact on water channels/land/residences</p> <p>Collisions of Birds with wind turbine</p>	<p>Consideration of Wind turbine location where they could be located to avoid avian breeding areas, water channels or agricultural land to a great extent and Followed EHS Guidelines on avoiding water pollution.</p> <p>Careful site selection to avoid existing avian/marine habitats and negative impacts.</p> <p>Adopt measures to reduce possible collision with birds during migration period using options to shut down plant and/or installation of radar in potential flight path.</p> <p>EPC contractor to implement mitigation measures according to CMS outlining construction</p>			CEB	<p>Complied; Part of project micro-sighting and survey and design</p> <p>Complied;</p>

Project Activity	Potential Environmental Impact	Mitigation Action	Location	Time Period	Institutional Responsibility	Compliance
		precautions.				
Equipment specifications and design parameters	Release of chemicals and harmful gases in receptors (air, water, land)	Ensure equipment design must be sound to avoid emissions for oil, gases etc.		Design stage and procurement	CEB	Complied; Detailed design
Encroachment into precious ecological areas	Loss of precious ecological values/ damage to precious species	Minimize the need for tower foundation disturbance wherever possible	Wind farm project area	During and after the construction period	CEB	Complied; Detailed design
Interference with drainage patterns/Irrigation channels	Temporally flooding hazards/loss of agricultural production	Appropriate siting of Wind turbines within Thonas (water channels) to avoid disturbing aquatic habitats in coastal area.	Wind farm project area	During the construction period	CEB	Complied; Detailed alignment survey and design
Explosions/Fire	Hazards to life	Provision of firefighting equipment to be located close to sub-transformers, power generation equipment.	Wind farm project area	During and after the construction period	CEB	Complied; Part of detailed layout and design /drawings

4.1 Compliance to Construction Method Statement

The EPC contractor is preparing CMS based on the outline provided in EIA report as part of the EMP which will be submitted to CEB ensuring environmental safeguards compliance. An outline of CMS for the wind farm has been provided in Appendix 3 of the draft BMP and reviewed. Comments were sent to ADB.

A meeting has been held with the representative of the contractor to discuss the key inputs for the construction method Statement (CMS) and Site Specific Environment Management Plan (SEMP). In the meeting the requirements of EIA, EMP, EMoP, and BMP were discussed in detail and shall be included in the CMS and SEMP.

Further a separate meeting with Department of Wildlife conservation is already scheduled to discuss and outline the framework of CMS based on the anticipations and requirements of DWLC which will be incorporated into final CMS.

5.0 Safeguard Monitoring & Reporting

The project is classified as environment category A, resettlement category B and indigenous people's category C. CEB has prepared an EIA, including an environmental management plan (EMP) and a Resettlement Plan (RP) for the Wind Power Generation Project.

The contractors and CEB will adhere to the SPS 2009 and national environmental regulations. In the event of any unanticipated environmental impacts during project implementation, CEB will take corrective actions, and update the EIA and revise the EMP & BMP.

Environmental impacts have been assessed and mitigation measures have been proposed in the EIA and EMP to minimize habitat and species disturbance, impacts on health and safety as a result of project construction and operation, and potential bird collision risks during operation. Impacts due to noise and shadow flicker were assessed based on a preliminary design of the wind farm, and mitigation measures have been prepared such as adjust the locations of sensitive receptors and relocate potentially affected structures.

The contractors shall prepare and submit the monthly progress report in conformance to CEB requirements and shall indicate when, how and at what cost the contractors' plans to satisfy the requirements as per detailed specifications. For each component, these programs shall detail the resources to be provided or utilized and any related subcontracting proposed.

CEB will provide environmental monitoring reports to ADB a quarterly basis during construction and an annual basis during operation and submit separate social monitoring reports to ADB a semi-annual basis. The environmental and social monitoring reports will describe implementation progress of environment and resettlement activities and compliance issues and include quantitative monitoring data in accordance with the EIA/EMP environmental monitoring plan and RP, respectively.

Pre-Construction monitoring such as air quality, surface water quality, ground water quality, marine water quality, noise/vibration, soil, and EMI shall be done once the contractor mobilized into the construction site.

5.1 Implementation of Grievance Redress Mechanism

As per the requirement of the monitoring and reporting the Environmental Monitoring and Social safeguard monitoring are required to be submitted periodically on quarterly and biannually basis respectively. Thus the Grievance redress mechanism has been detailed in the Social Safeguard Monitoring report as a separate report at the time of submitting the Environmental safeguard monitoring report. As such steps were taken to establish the Grievance redress Committee at Site level, and PMU level.

The first tier of the GRM, which is active at site level has already been in operation, and so far, no complaints has been received to the committee. A discussion was held on December 12, 2018 with divisional secretary of Mannar Town Divisional Secretariat regarding the establishment of the second level of the GRM. In this meeting it was discussed on the members of GRC, mechanisms to receive complaints and registration of complaints, frequency of convening the meeting,

6.0 Detail Project Implementation schedule

The following table gives the current implementation schedule of the project, and it will be updated once the contract commencement is established and when the contractor mobilized to the site.

PROJECT IMPLEMENTATION SCHEDULE
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Task Name	Duration	Start	Finish
Bidding Procedure	137 days	Wed 14/03/18	Thu 20/09/18
Invitation of ICB	1 day	Wed 14/03/18	Wed 14/03/18
Prebid Meeting and Site Visit	2 days	Wed 28/03/18	Thu 29/03/18
Bid closing & Technical Bid Opening	1 day	Wed 09/05/18	Wed 09/05/18
Technical Bid Evaluation	29 days	Thu 10/05/18	Tue 19/06/18
SCAPC Approval and ADB Concurrence for Technical Evaluation	24 days	Wed 20/06/18	Mon 23/07/18
Opening of Financial Proposals	3 days	Tue 24/07/18	Thu 26/07/18
Financial Bid Evaluation	4 days	Fri 27/07/18	Wed 01/08/18
SCAPC Approval and ADB Concurrence for Price Evaluation	11 days	Thu 02/08/18	Thu 16/08/18
Obtaining Cabinet Approval	25 days	Fri 17/08/18	Thu 20/09/18
Contractual & Financial Proceedings	44 days	Tue 25/09/18	Fri 23/11/18
Notification of Award	1 day	Tue 25/09/18	Tue 25/09/18
Contract Agreement Signing	1 day	Wed 24/10/18	Wed 24/10/18
Establishment of LC	1 day	Thu 15/11/18	Thu 15/11/18
Release of Advance Payment	1 day	Thu 22/11/18	Thu 22/11/18
Contract Commencement	1 day	Fri 23/11/18	Fri 23/11/18
Project Implementation	396 days	Fri 23/11/18	Fri 29/05/20
Preliminaries	19 days	Fri 23/11/18	Wed 19/12/18
Project Preliminary Work	5 days	Fri 23/11/18	Thu 29/11/18
Contractor Mobilized into the Site	14 days	Fri 30/11/18	Wed 19/12/18
Detail Design of Project Structures and Equipment	120 days	Thu 20/12/18	Wed 05/06/19
Machine Design Approvals	60 days	Thu 20/12/18	Wed 13/03/19
Park Design Approvals	90 days	Thu 20/12/18	Wed 24/04/19
Design Approvals for Roads, Foundations and Pier	120 days	Thu 20/12/18	Wed 05/06/19
Construction, Manufacturing & Transport	270 days	Thu 14/02/19	Wed 26/02/20
Construction of Temporary Pier	60 days	Thu 14/02/19	Wed 08/05/19
Construction of Access Roads	160 days	Thu 14/02/19	Wed 25/09/19
Construction of Machine Foundations	220 days	Thu 25/04/19	Wed 26/02/20
Development of Wind Park Infrastructures	200 days	Thu 14/02/19	Wed 20/11/19
Manufacturing of WTG and Balance of Plant	180 days	Thu 14/03/19	Wed 20/11/19
Sea Transport and unloading at Project Site	180 days	Thu 09/05/19	Wed 15/01/20
Erection and Commissioning	207 days	Thu 15/08/19	Fri 29/05/20
Erection of Wind Turbines	120 days	Mon 07/10/19	Fri 20/03/20
Commissioning of Wind Turbines	60 days	Mon 13/01/20	Fri 03/04/20
Erection of Power Cable Network and Commissioning	100 days	Thu 15/08/19	Wed 01/01/20
Commissioning of Park Control Systems	60 days	Mon 09/03/20	Fri 29/05/20
Project Completion	127 days	Mon 01/06/20	Tue 24/11/20
Power Curve Verification	120 days	Mon 01/06/20	Fri 13/11/20
Project Taking over	7 days	Mon 16/11/20	Tue 24/11/20
Defects Liability period	522 days	Wed 25/11/20	Thu 24/11/22
Securing Lands for Project Structures	561 days	Fri 08/07/16	Fri 31/08/18
Purchase of Lands from willing to sell Owners	495 days	Fri 08/07/16	Thu 31/05/18
Acquire of Lands the owners cannot be identified	391 days	Thu 01/12/16	Thu 31/05/18
Acquire of Lands the owners are not willing to sell	435 days	Mon 02/01/17	Fri 31/08/18

7.0 Conclusions and Recommendations.

It has been identified the project activities associated with the environment during pre-construction, implementation and operation phases.

Besides, most of the impacts are envisaged during implementation stage where activities such as clearing of trees at the Turbine Locations, Hardstand areas and along the main access road, soil excavations for foundations, Soil compaction at Hardstand areas and general Civil construction works and erection of equipment have several impacts on the existing environment which can be categorised as follows:

- Impact on Physical Resources (Impact on Topography, Impact on Climate)
- Impact on Environmental Resources (Impact on Air Quality, Impact on Noise Levels, Impact on Surface Water Quality, Impact on Ground Water Quality, Impact on Soils and Geology)
- Impact on Ecological Resources (Terrestrial Ecology, Aquatic Ecology, Ornithology)
- Impact on Human Environment (Health and Safety, Agriculture, Socio-economics, Resettlement and Rehabilitation Cultural sites, Traffic and Transport, Interference with other utilises and traffic)
- Waste Disposal (Solid waste disposal, Liquid waste disposal)

During the whole lifecycle of the project Environmental Safeguard Measures shall be adopted to mitigate the anticipated and unanticipated impacts in accordance with the applicable acts and the legislations of the country.

The contract for the construction of the 100MW semi dispatchable wind farm has been awarded to M/s Vestas Asia Pacific A/S on November 28, 2018. **(Annex 5).**

The site clearing for the demarcation of the foot print selected for the wind turbine has been started by the CEB. This will ease the surveying work that will followed by the section 5 notices for land acquisition. Best practices and close supervision have been adopted by the CEB. Clearing foot print was marked and followed with precise GPS monitoring of the boundary stone. Commercially valuable and ecologically important trees and shrubs were retained where ever possible.

A Dilapidation survey has been carried out by the EPC contractor with the participation of relevant stakeholders such as Pradheshiya Sabah, Road Development Department (RDD), and Road Development Authority (RDA). **(Annex 6).**

A meeting was held at the Mannar Pradheshiya Sabah to enlighten the newly appointed members of Pradheshiya Sabah on project and to involve them in future activities of public consultations. Several environmental concerns were clarified during this meeting. **(Annex 7).**

Annex 1. Photographic Records of the Pre-construction Bird Survey within Wind Farm Area



Annex 2. Photographic Records of the Pre-construction Bird Survey (Birds within Wind Farm Area)



2.1. Heuglin's Gull and Brown Headed Gulls
(On the beach 250m from the WTG location)



2.2 Brahminy Kite
(On the beach 225m from the WTG location)



2.3 Heuglin's Gulls at Nadukuda Beach
(On the beach 250m from the WTG location)



2.4 Brown Headed Gulls in Old Pier Beach
(On the beach 250m from the WTG location)

Annex 3: Pre-Bid Meeting held on December 11, 2018 for Monitoring the Implementation of BMP and EMP.



Annex 4. A complete surveillance photographic records were kept during the land cleaning process



Annex 5. Signing of the contract agreement with M/s Vestas Asia Pacific A/S on November 24, 2018.



Annex 6. Dilapidation survey of roads with M/s Vestas Asia Pacific A/S on December 12, 2018



Annex 6. Awareness meeting and presentation to Mannar Pradheshiya Sabah on October 18, 2018.

