

# Environmental and Social Monitoring Report

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February 2020

## Pakistan: Zorlu Enerji Power Project

Prepared by Élan Valorisation (Pvt.) Ltd for Zorlu Enerji Pakistan Limited and the Asian Development Bank.

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# **Zorlu Wind Power Project**

## **Environmental and Social Monitoring Report**

### **with Stakeholder's Consultation at 7th Year of Operation**

Ref.: ESMR19-ZORLU-AR-2019



**February 2020**

Prepared for  
Zorlu Enerji Pakistan Limited

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# LIST OF ACRONYMS

<b>AEDB</b>	Alternate Energy Development Board
<b>ADB</b>	Asian Development Bank
<b>AEUP</b>	Area Ecology Up-Gradation Plan
<b>AQMP</b>	Air Quality Monitoring Plan
<b>BMP</b>	Bird Monitoring Plan
<b>CCDP</b>	Comprehensive Community Development Plan
<b>CV</b>	Curriculum Vitae
<b>DRP</b>	Data Record Plan
<b>DRS</b>	Data Record Sheets
<b>ECA</b>	Employment of Child Act
<b>EEE</b>	Economics, Energy and Environment
<b>EIA</b>	Environmental Impact Assessment
<b>EHS</b>	Environmental, Health and Safety
<b>EMP</b>	Environmental Management Plan
<b>EPC</b>	Engineering, Procurement and Construction
<b>ESI</b>	Environmental and Social Inspector
<b>ESO</b>	Environmental and Social Officer
<b>FGD</b>	Focus Group Discussion
<b>HESCO</b>	Hyderabad Electric Supply Company
<b>HSE</b>	Health, safety and Environment
<b>IEE</b>	Initial Environmental Examination
<b>IFC</b>	International Finance Corporation
<b>JAUP</b>	Jhimpir Area Up-Gradation Plan
<b>KYWDO</b>	Keenjhar Youth Welfare Development Organization
<b>MSDS</b>	Material Safety Data Sheets
<b>NCHD</b>	National Commission for Human Development
<b>NGOs</b>	Non-Government Organizations
<b>NOC</b>	No Objection Certificate

<b>NMP</b>	Noise Monitoring Plan
<b>Pak-EPA</b>	Pakistan Environmental Protection Agency
<b>PEC</b>	Pakistan Engineering Council
<b>PEPA</b>	Pakistan Environmental Protection Act
<b>PD</b>	Project Director
<b>PPEs</b>	Personal Protection Equipment's
<b>RO</b>	Reverse Osmosis
<b>SEPA</b>	Sindh Environmental Protection Agency
<b>SWMP</b>	Solid Waste Management Plan
<b>WBG</b>	World Bank Group's
<b>WWF</b>	World Wide Fund for Nature

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## EXECUTIVE SUMMARY

Élan Valorisation (Pvt.) Ltd. is entrusted as independent monitoring consultant in order to monitor environmental and social compliance for operational phase of Zorlu Wind Farm. Zorlu O&M is the maintenance contractor of the wind farm. The Zorlu Wind Farm (56.4 MW) has been under operation since March, 2013. ESCM for O&M phase was awarded to Élan Valorisation (Pvt.) Ltd. in August, 2014.

Environmental and Social Monitoring comprises mainly i) compliance monitoring required to investigate environmental orthodoxy of the project with approved EIA and ESMP and; ii) effect monitoring required to assess the effectiveness of mitigation measures proposed in ESMP. Present report on Annual Environmental and Social Monitoring of the project has been prepared for 7<sup>th</sup> year of operation to meet requirement as recommended in ESMP. It covers environmental performance of project and social actions taken during this year.

Major activities carried out by monitoring experts during this annual monitoring visit are; meetings with project staff, monitoring of environmental and social compliance documents, physical visit/inspection of the site and stakeholder's consultation. The monitoring includes looking after of environmental compliance at control room building, switch yard area and other active operational sites such as operational wind turbines, workshop, battery/SCADA/MV rooms, dispensary, RO plant, wastes produced etc. This year IFC staff/rep has not visited the wind farm.

As far as documentation and record keeping is concerned, it is generally up to mark. Daily/weekly/Monthly DRS are being developed and are found complete. Firefighting system is operational and firefighting drills have been conducted to prepare for any unforeseen. Long outstanding issue of low pressure in eyewash of battery room has been resolved. Air quality is monitored regularly and reports are found within specified limits of Sindh Environmental Quality Standards (SEQS). Noise quality monitoring reports manifest that compliance status is satisfactory.

Under CSR, company is providing basic facilities to the locals like drinking water. As far as suggestions mentioned in CCDP are concerned, these are yet in process of compliance, however Zorlu has planned to work on provision of standalone solar facility for all houses of one Goth. Stakeholders/Community consultation at 7<sup>th</sup> year of the project has been carried out by using tool of FGD.

Overall, status of ESMR of current year is satisfactory. Deficiencies regarding E&S performance and improvements required are enlisted in this report and have been communicated to the project developer and contractor.

# 1. INTRODUCTION

In order to monitor environmental and social compliance during operation phase of Zorlu wind form Élan Valorisation (Pvt.) Ltd. is entrusted as independent monitoring consultant. Zorlu Wind Farm has been under commercial operation since June, 2013. Zorlu (O&M) Pakistan Ltd is Operation and Maintenance contractor of the wind farm. The monitoring has to be carried out to ensure implementation of Environmental and Social Management Plan (ESMP), Air Quality Monitoring Plan (AQMP), Noise Monitoring Plan (NMP), Solid Waste Management Plan (SWMP), Bird Monitoring Plan (BMP), Specific Training Record Sheets, Risk Assessment Sheets, Emergency Response Procedures (ERP), EHS Regulations, Zorlu O&M Regulations and CCDP.

Document in hand is 6<sup>th</sup> annual Environment and Social Monitoring Report (ESMR) of Zorlu Wind Farm. The report covers monitoring of environmental and social compliance at/around Zorlu Wind Farm in year 2019. Data of previous year monitoring is available in annexures. This report has been prepared for submission to International Finance Corporation (IFC).

## 1.1 Zorlu Wind Farm

Total premises of Zorlu Wind Farm comprises of 1,300 acres of land. It is located about 100 km southeast of Karachi near Jhimpir town in Thatta District. The site is located in a flat rocky area and is about 50m above sea level. The site is approachable by roads and rails both. Wind Farm site is accessible through M-9 Motorway (Formerly Super Highway) as well as through National Highway.

The Wind farm was developed in two phases. In 1st phase 6 MW, five German-made gearless “VENSYS 62” wind turbines each capable of producing 1.2 MW were installed/connected with 11 KV HESCO network. It started generation in April 2009. In 2nd phase, 28 more wind turbines of 1.8 MW capacity each, supplied by “Vestas” of Denmark were installed to produce a total of 50.4 MW electricity. This increased the capacity of the project to 56.4 MW. The project was completed in March 2013. The capacity enhancement of the Project was approved by Alternate Energy Development Board (AEDB). All turbines have been connected to a substation with an underground power cable system. The sub-station is connected to national grid system of HESCO/NTDC. The wind farm is operational continuously since its commissioning. Its yield for year 2019 is given in following table;

**Table 1-1: Complex Energy Yield and Power Curve 2018-2019**

<b>Net Production (MWh) 2018-19</b>		
<b>Month</b>	<b>Achieved monthly production MWh</b>	<b>Wind speed m/s</b>
Oct-18	4.74	3,856.81
Nov-18	4.79	4,333.30
Dec-18	5.18	5,569.60
Jan-19	5.47	5,530.12
Feb-19	5.84	7,762.53
Mar-19	5.26	6,526.91
Apr-19	6.71	10,759.02
May-19	8.42	17,951.15
Jun-19	8.41	17,180.08
Jul-19	10.98	23,235.47
Aug-19	7.54	14,243.79
Sep-19	5.45	7,052.62
<b>Average Wind Speed &amp; Total Production</b>	6.57	124,001.40

## 1.2 The Proponent – ZEPL

Zorlu Wind Farm has been developed by Zorlu Energy Pakistan Limited (ZEPL), a subsidiary of the Turkish firm Zorlu Enerji. Zorlu O&M Pakistan Limited (ZOMP) is providing operation and maintenance services to ZEPL at Zorlu Wind Farm.

## 1.3 The Lender – IFC

Asian Development Bank (ADB) and International Finance Corporation (IFC), a member of World Bank Group has invested with Zorlu Enerji Pakistan. Zorlu Enerji is a key IFC client in the renewable energy sector and is considered to be one of experienced members of electricity generation/distribution market of world. With presence in many countries of the world; Zorlu decided to enter in renewable energy sector of Pakistan by establishing a wind power plant at Jhimpir, district Thatta of Sindh province. Implementation of ESMP, EIA, CCDP and environmental & social compliance during O&M phase of the project is one of the mandatory requirements set

by project financing agency IFC. Accordingly, Élan Valorisation (Pvt.) Ltd has been entrusted for assignment of monitoring the implementation of ESMP, EIA and CCDP.

## **1.4 The Consultant – Élan Valorisation (Pvt.) Ltd**

Élan Valorisation (Pvt.) Ltd. is the sister company of Élan Partners (Pvt.) Ltd. which is dedicated for environmental and social studies as well as third party monitoring. Élan Valorisation comprises of highly experienced team of environmental and social professionals having multidimensional experience to deal with the environmental and social aspects of developmental activities in Pakistan.

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## **1.5 Environmental and Social Monitoring**

Environmental and Social Management Plan (ESMP) for construction phase was prepared as part of Environmental Impact Assessment (EIA). EIA for first phase were carried out in 2008 and for second phase 2012. Get approved both these from Sindh-Environmental Protection Agency (Sindh-EPA) vide letter Reference No. EPA/S/E/2008/4/9EIA90 dated 29.3.2009. Bird Monitoring Plan (BMP) and Comprehensive Community Development Plan (CCDP) as suggested in EIA report, were developed and get approved in 2012.

Environmental and Social Management Plan (ESMP) for O&M phase of the project was prepared in 2014 and sent to the Zorlu. Under the national and international environmental laws/regulations, project developer (Zorlu Enerji Pakistan Ltd) is

required to implement the approved ESMP (for O&M phase), EIA, BMP and CCDP in letter and spirit.

This ESMR highlights status of environmental performance at Zorlu Wind Farm by documenting environmental compliance measures adopted as well as activities under CSR by the project developer (Zorlu Enerji Pakistan) and O&M contractors (Zorlu O&M Pakistan). Deficiencies in environmental & social compliance and recommendations for improvement are the part of this report. Compliance of approved EIA and ESMP has particularly been documented in the report.

This ESMR also contains results/outcome of Stakeholders/Community consultation in addition to regular report. The consultation is carried out at 7<sup>th</sup> year of the project operation. A performa for focus group discussion is developed for this purpose. The focus group discussion is conducted in three neighboring goth of the wind farm.

## 2. ENVIRONMENTAL PERMISSIONS AND COMPLIANCE CERTIFICATES

Environmental Impacts Assessment (EIA) of Zorlu Wind Farm was carried out and Environmental and Social Management Plan (ESMP) was prepared under the national and international environmental laws and regulations including, Pakistan Environmental Protection Act, 1997, Pakistan Environmental Protection Agency (Pak-EPA) EIA/IEE Review Guidelines, 2000, IFC-Environmental and Social Review Procedures and World Bank Environmental and Social Safeguard Policies.

EIA including ESMP for the first phase of the project was approved by Sindh-Environmental Protection Agency (Sindh-EPA) on 09-04-2008 and No Objection Certificate (NOC) was issued. Whereas; the second phase EIA and ESMP was approved by the same agency (Sindh-EPA) on 21-04-2012.

Previously approved ESMP was only prepared for construction phase of the project. ESMP for O&M phase was prepared currently and submitted to the project developer (Zorlu Enerji). For further approval Zorlu Enerji will submit ESMP to Sindh-EPA.

Sindh-EPA issued environmental approval subjected to specific conditions which are required to be fulfilled by project developer. A few of the conditions of environmental approval and their compliance status have been provided in **Table 2-1** below:

**Table 2-1: Conditions for Environmental Approval for Zorlu Wind Farm**

Conditions of Environmental Approval	Compliance Status
Project will be constructed at safe distances away from any area of environmental and social sensitivity.	Complying with this condition, Zorlu Wind Farm has been constructed at barren land away from human settlements and no such areas of environmental and social sensitivity are located near the wind farm site.
No industrial or residential activity will be allowed at wind farm site.	No such activity is being done at wind farm site.
Employment shall be provided to local skilled and unskilled people.	Zorlu Enerji has appointed 14 numbers of local people for various skilled and unskilled jobs during O & M period at wind farm. Detail of local people employment has been provided in upcoming sections of the report.
Project proponent will ensure the implementation of EIA and EMP and will report the responsible authority.	Zorlu has appointed the Élan Valorisation (Pvt.) Ltd as environmental and social monitoring consultants, to ensure the implementation of EIA and EMP. Environmental and social monitoring reports are also prepared on quarterly basis for submittal to Sindh-EPA and other relevant organizations such as International Finance Corporation (IFC) and Asian Development Bank (ADB).
Project proponent will be responsible to implement all relevant sections of Pakistan Environmental Protection Act ( PEPA, 1997) and Pak-EPA EIA/IEE Regulations	All relevant sections of PEPA, 1997 and Pak-EPA regulations are being implemented at Zorlu Wind Farm. No major violations have been recorded during the reporting period.



### **3. FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL MONITORING**

Environmental and social compliance monitoring of the Zorlu Wind Farm is being carried out by Élan Valorisation (Pvt.) Ltd on regular basis. Team of environmental and social experts carries the environmental and social monitoring of the project on quarterly basis during O & M phase and environmental and social monitoring reports are prepared and submitted to the Zorlu Enerji Pakistan Limited.

#### **3.1 Components of Environmental & Social Monitoring**

This section provides the process of environmental and social monitoring which is being carried out during O & M period of Zorlu Wind Farm. Step wise description of various elements and activities of environmental and social monitoring is provided below:

##### **3.1.1 Site Visits by Environmental Experts**

Environmental and social experts of Élan team visited the site on quarterly basis during O & M phase. During the site visit following activities related to environmental and social monitoring were carried out during the site visits:

- Meeting with O & M personnel at site particularly those responsible for environmental management and implementation of EIA at Zorlu Wind Farm;
- Monitoring of environmental and social compliance documents;
- Field monitoring;
- Concluding meeting with project developer (Zorlu Enerji).

Relevant environmental and social data is collected from site personnel. Available data is processed and findings are drawn related to the environmental management and compliance status of O & M activities of Zorlu Wind Farm.

During site visit, besides the collection of data from project personnel, environmental experts of Élan also carry out detailed site visit at key components of the project including:

- O & M Camp;
- Grid Station;
- Control Room Building
- Fire Fighting Station;
- Staff Residence
- Wind Turbines;
- Dispensary

- Other O & M facilities such as sewerage tanks, solid waste dumping site and store rooms are also examined during the site visits.

Each site visit comprises the following major activities:

### **3.1.2 Meeting with Project Personnel**

During each site visit, three types of people are generally met which include:

- Site personnel responsible for environmental management and implementation of EIA and EMP at Zorlu Wind Farm;
- Management at project site including site manager and;
- Senior management of Zorlu at Zorlu head office located at Karachi.

These meetings are aimed at verbal communication of environmental management and compliance status to the relevant personnel. Deficiencies in environmental performance if any and corrective measures are also discussed during the meetings.

### **3.1.3 Monitoring of Environmental Compliance Documents**

EIA and ESMP put the need to prepare, maintain and implement the environmental compliance documents by the O & M contractors which include; Solid Waste Management Plan, Noise Quality Monitoring Plan, Water Quality Monitoring Plan and HSE Plan. Adequacy and implementation status of environmental compliance documents is evaluated and suggestions for further improvement are communicated to the relevant site personnel and senior management of Zorlu as well.

### **3.1.4 Trainings and Capacity Building**

In EIA report of Zurlu Wind Power Project section- 8 (Monitoring and Follow-up Measures) it is required to train the working force to raise awareness and capacity building. To fulfil the training requirements; IOSH session in December 2016 and ISO 14001:2015 Lead Auditor session in December 2017 **Annexure-O**; have been conducted. The trainings are given to HSE manager, HSE inspector, representatives from Head office and three other staff member from O&M team, who have to act as Master trainer to impart training to all the staff working at the wind farm.

### **3.1.5 Field Monitoring**

Field monitoring is carried out in order to assess the compliance status and effectiveness of, in practice mitigation measures at O & M sites including; O & M camp; grid station, O & M control building and O & M facilities (solid waste dumping site, store rooms, sewerage tanks).

Following is the list of areas focused during the environmental and social monitoring. These areas serve as monitoring indicators and show the implementation and

adequacy of mitigation measures proposed in EMP to minimize the potential environmental and social impacts of the project during O & M phase:

- Air quality (Noise);
- Water quality;
- Soil contamination;
- Solid waste management;
- Wastewater;
- Flora and Fauna;
- Bird monitoring;
- Health and safety of workers/employees; and
- Community development

Findings of the environmental and social monitoring are documented in the form of quarterly environmental monitoring reports which are communicated to the client on quarterly basis during O & M phase. Environmental and social monitoring reports comprise of the following main elements/sections:

- Existing status of environmental management and compliance with approved EIA and ESMP;
- Shortcomings/deficiencies in environmental performance of the project;
- Recommendations for corrective/remedial measures;
- Conclusion.

### **3.1.6 IFC Monitoring Visit**

The year 2019 is 6<sup>th</sup> year of operation for the 56MW Zorlu wind farm. IFC representative have used to visit annually in the last quarter of the year. However, IFC staff/rep in current reporting year i.e. 2019 has not visited the wind farm.

### **3.1.7 Emergency Response Procedure (ERP)**

A comprehensive Emergency Response Procedure manual has been formulated by ZEPL. These procedures cover general emergency situations as well as crises situation related specially to wind turbines. The purpose of this manual is to develop a system which provides instructions and assigns responsibilities in case of any emergencies. ZEPL commits resources and funding necessary to develop and implement appropriate emergency preparedness programs and drills. Specific emergency response plans are maintained for ZEPL operating sites. These plans provide instructions to manage an emergency and establish roles and accountabilities for emergency response tasks. While every situation is different and one may have to

take decisions under pressure. In such cases, these guidelines help to take such measures which ensure the safety of maximum people. In this quarter, the firefighting drill has been carried keeping in view this ERP, **Annexure-K**.

### **3.1.8 Integrated Management System (IMS)**

The Integrated Management System (IMS) Manual for Zorlu Wind Farm covers all the activities related to operation and execution of supervision carried out at Zorlu O&M Pakistan.

This Manual is based on the Quality, Environment, Health & Safety Assurance model that covers the requirements of three specific Standards applicable to the following areas of the Company's activities, and also the Company is already ISO/OHSAS certified in this regard as illustrated in **Annexure-P**.

- i. ISO 9001: 2015 – Quality Management System
- ii. ISO 14001: 2015 – Environmental System Requirements
- iii. OHSAS 18001: 2007 – Health and Safety Requirements

Each section of the manual contains the statements about the Company policy for each standards element.

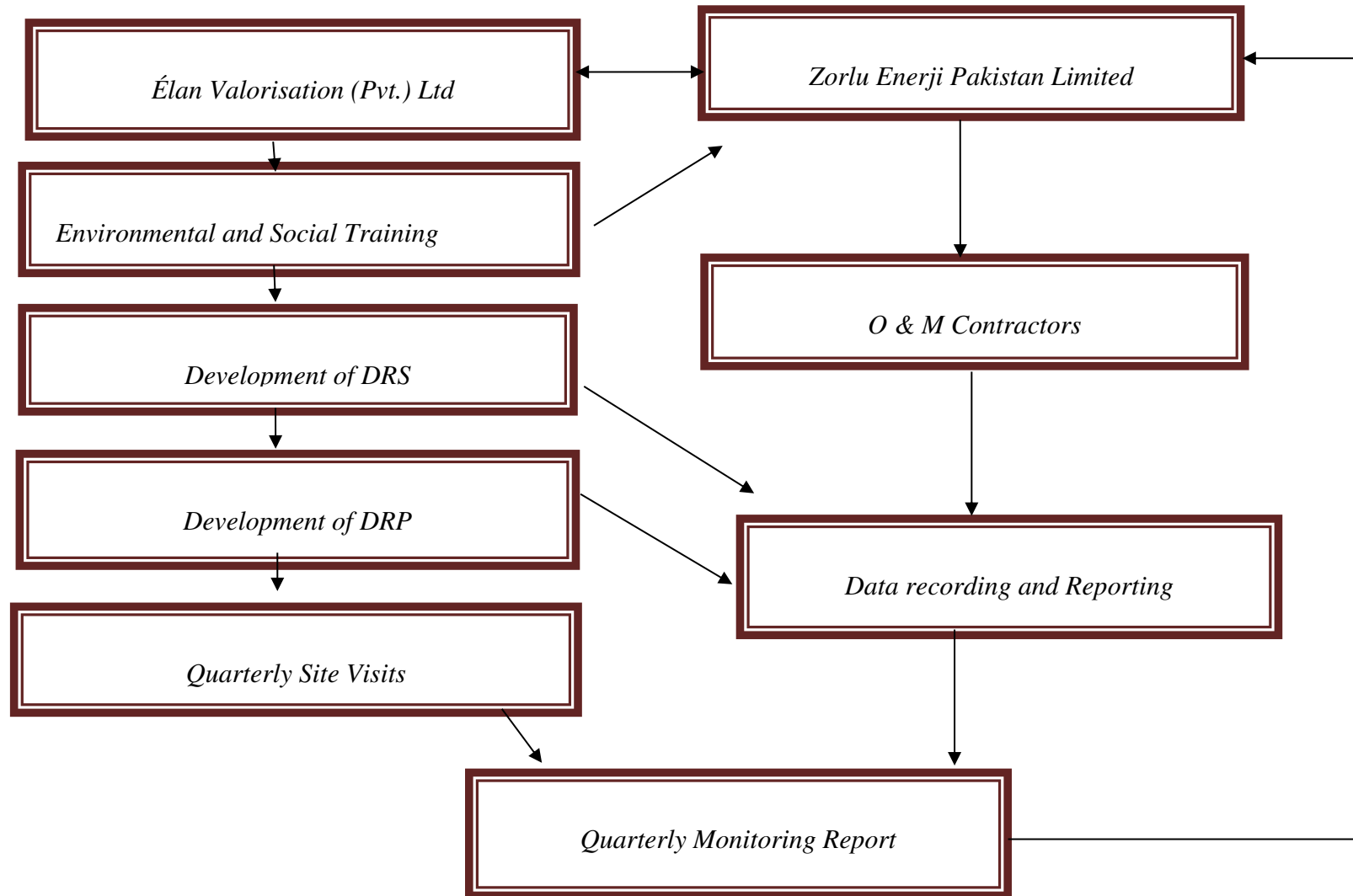
The system requirements of this manual are aimed at achieving customer satisfaction by consistently providing Quality services related to power generation through application of the system ensuring continuous improvement and the prevention of nonconformity.

### **3.1.9 Zorlu Energy Campsite Security Plan**

Zorlu campsite features a comprehensive security plan. The plan comprises of 44 security guards including supervisors. The security plan operates in three shifts 1.e. A, B and C. Shift A and B features deployment of 14 guards whereas shift operates on 16 guards. The guards are assigned at different location around Zorlu setup like campsite, gates, Grid station and wind turbines. The guards are well equipped with arms and well trained. Out of 44 guards, 30 are local and 14 are outsiders.

**Exhibit 3-1** presents the flow chart of existing mechanism of environmental and social monitoring at Zorlu Wind Farm.

**Exhibit 3-1: Existing Mechanism of Environmental and Social Monitoring at Zorlu Wind Farm**



Following is the list of persons involved in monitoring exercise and stakeholder/community consultation at 7<sup>th</sup> year of the project operation whereas profiles of the experts have been attached at **Annexure A**.

S. Anwar Raza	Team Leader / Chief Executive Officer
Naveed Ul Haq	Director Environment & Spatial Planning
Muhammad Amir	Social Expert & Environmentalist
Waqas Ahmed	Environmentalist
Mrs. Ayesha Naveed	Environmentalist

## **4. ACCIDENTS RELATED TO ENVIRONMENT /SAFETY**

Health and safety measures are well cared of at all project locations including O & M camp, grid station and O & M control building. Necessary health and safety equipment's have been made available to the workers at all project locations.

### **4.1 Accidents Related to Work Place Safety**

O & M contractors have established well developed mechanism of HSE monitoring and reporting which has been discussed in upcoming section. During the reporting period, no incident of environmental and safety accident was reported. O & M contractor has established proper Safety Accident Report Forms to record and report any incident of safety accident. A sample safety accident report form is attached as **Annexure B**.

An equipped first aid room and ambulance facility is available at O & M camp with the qualified nursing staff available for twenty four hours. First aid boxes have been maintained at various locations within the O & M control building. Various first aid items are kept in the first aid boxes. In addition to it, all first aid items and necessary medicines are also kept in dispensary.

Proper PPEs have been maintained within the O & M control building and all workers and O & M staff uses these PPEs when required. A sample PPEs inspection sheet is provided as **Annexure C**.

## **5. LABOR RELATIONS – LEGAL FRAMEWORK**

Environmental Impact Assessment of the Zorlu Wind Farm has been conducted under the following laws and regulations related to the labor conditions.

### **5.1 Factories Act, 1934**

The clauses relevant to the proposed project are those that address the health, safety and welfare of the workers, disposal of solid waste and effluents, and damage to private and public property. The Act also provides regulations for handling and disposing toxic and hazardous substances. The Pakistan Environmental Protection Act of 1997, supersedes parts of this Act pertaining to environment and environmental degradation.

### **5.2 Employment of Child Act, 1991**

Article 11(3) of the Constitution of Pakistan prohibits employment of children below the age of 14 years in any factory, mines or any other hazardous employment. In accordance with this Article, the Employment of Child Act (ECA) 1991 disallows the child labor in the country. The ECA defines a child to mean a person who has not completed his/her fourteenth years of age. The ECA states that no child shall be employed or permitted to work in any of the occupation set forth in the ECA (such as transport sector, railways, construction, and ports) or in any workshop wherein any of the processes defined in the Act is carried out. The processes defined in the Act include carpet weaving, bidi (kind of a cigarette) making, cement manufacturing, textile, construction and others. The project proponent and its contractors will be bound by the ECA to disallow any child labor at the project sites or campsites.

### **5.3 IFC-Environmental, Health and Safety Guidelines 2007<sup>1</sup>**

The project has also been analyzed against new World Bank Group's Environmental, Health and Safety Guidelines 2007, including:

- IFC/WBG EHS General Guidelines, April 30, 2007;
- IFC/WBG EHS General Guidelines for Wind energy, April 30, 2007;
- IFC/WBG EHS General Guidelines, for Electric Power transmission and Distribution, April 30, 2007;
- Social Security Guidelines of International Labor Organization (ILO).

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<sup>1</sup> The technical revision of the EHS Guidelines is expected to last three years and will be done in four phases. Each phase will consist of a "batch" of EHS Guidelines to be updated concurrently. The first batch/phase begins with a limited number of EHS Guidelines in 2013. It will also serve as a piloting phase that will inform the ramp up of subsequent phases/batches that will include a larger number of Guidelines.



Monitoring of labor relations and conditions at wind farm site is governed by above mentioned laws and guidelines. During O & M phase, 14 people have been appointed from nearby local communities. O & M security staff works in two shifts and each shift comprises twelve hours duration whereas; the technical staff works in three shifts and each shift lasts for eight hours. It is to mention here that O & M contractor pays overtime wages to all staff working more than duty hours. Local O & M staff also returns to their homes after completing their shifts. O & M contractor has well established procedures to treat the workers and procedures of payments to employees. Zorlu believes in equal share of working opportunities for workers from all areas, races and tribes. Therefore there are less chances of any dispute and sense of inequality among the workers. All workers are treated equally in accordance with the established procedures. No incident of labor disputes and non-compliance with any Social Protection Requirements has been noted during the reporting period.

## **5.4 ADB's Safeguard Policy Statement 2009**

The ADB's safeguard policy 2009 sets out the policy objectives scope and trigger, and principles for following three key safeguard areas:

- Environmental safeguard
- Involuntary resettlement safeguard and
- Indigenous people safeguards.

### **Environmental Safeguards**

This policy element ensures the environmental soundness and sustainability of projects and supports the integration of environmental considerations into the project decision-making process. Environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts.

### **Involuntary Resettlement Safeguards**

This policy guideline encourages avoiding involuntary resettlement by exploring project and design alternatives; to enhance, or at least restore, the livelihoods of all displaced person in real terms relative to pre-project levels; and to improve the standards of living of the displaced poor and other vulnerable groups.

### **Indigenous People Safeguards**

This guides the project proponent to design and implement projects in a way that fosters full respect for indigenous peoples' identity, dignity, human rights, livelihood systems, and cultural uniqueness as defined by the indigenous peoples themselves so that they (i) receive culturally appropriate social and economic benefits, (ii) do not suffer adverse impacts as a result of projects, and (iii) can participate actively in projects that affect them.

## 6. CAPACITY FOR REGULAR MONITORING OF ENVIRONMENTAL AND SOCIAL ISSUES

In accordance with the recommendations of Environmental Management Plan, following proposed personnel will assign the duties to look after the environmental and social issues of the project:

### O & M Phase Staff

- Environmental and Social Inspector (ESI), Project Developer;
- Environmental and Social Officer (ESO), O & M Contractor;

Mr Shahid Ali and Mr Imtiaz Ali have been given IOSH training to perform duty of ESO and ESI respectively. They are further trained as Environmental Audit in 2017 to perform these tasks smoothly.

Training on ISO/DIS 26000 regarding CSR was planned in the last quarter of 2019 but could not be conducted. However, it is rescheduled for first quarter of 2020.

Roles and responsibilities of these nominated professional in accordance with ESMP are as below:

- The ESI ensures implementation of the environmental management plan in the field. He also coordinates with the O&M contractor's management and ESO of contractors. If any monitoring teams from government departments or from NGOs visit the field during the field activities, the ESI will be responsible for coordinating their visits;
- The ESO of contractor is responsible for the implementation of the ESMP during O&M phase. He is also responsible for communication with and the training of their respective O&M staff in all aspects of the ESMP;
- HSE Manager ensures the implementation of health and safety measures and approved HSE plans during O & M phase of the project.
- HSE Manager is responsible for and conducts the internal audits on Bi-annual basis.
- Twenty first aid trained workers present on turbines are responsible to initially manage the situation if any incident happens.

Environmental and HSE persons are well educated and experienced. They are well aware of the environmental and social requirements of the project as well as familiar with the basic tools of environmental management, health and safety and have sufficient knowledge of relevant national and international environmental laws and regulations.



Figure 1 Organogram related to E&S Management

## Environmental and Social Trainings

Plan for environmental and social trainings for O&M phase of the project has been prepared as part of EMP. Environmental and social trainings will be aimed to ensure that the requirements of the EIA and ESMP can be clearly understood and followed by all project personnel throughout the O & M period. The trainings will be provided to the Zorlu staff, the O & M contractor, and other staff engaged for the project operation and maintenance. The environmental and social training will cover all staff levels, ranging from the management and supervisory to the skilled and unskilled categories. The scope of the training will cover general environmental awareness and the requirements of the EIA and the ESMP, with special emphasis on sensitizing the project staff to the environmental and social aspects of the area. List of training conducted in the year 2019 is provided at **Annexure M**

## **7. STAKEHOLDER CONSULTATION UNDER CORPORATE SOCIAL RESPONSIBILITY ACTIVITIES**

Zorlu Enerji Pakistan Limited is well aware of the need of community development and social well-being related to the establishment of wind farm in the area. Comprehensive Community Development Plan (CCDP) has been prepared in 2012. As the needs and socio economic conditions of the area are changing with passage of time, so Zorlu has updated CCDP in 2015 presently CCDP is passing through the implementation phases. Overall community in the project surrounding areas belongs to poor income groups and majority is illiterate. Following efforts have been made by the Zorlu towards the community participation and development:

### **7.1 Social Capacity Building**

Zorlu sponsored the KYWDO computer center on recommendation of World Wide for Nature/Indus for all Programs (WWF-Indus for all programs). According to the initial agreement, Zorlu provided financial assistance of Rs. 30,000/per month to the KYWDO, computer center for the period of one year starting from March, 2012 to February, 2013. Contract with KYWDO was extended for next two years on recommendations of WWF and DCO, Thatta and has stopped in January 2015. A Social Mobilizer had also been appointed for resolving the social issues associated with O & M phase of Zorlu Wind Farm.

#### ***Zulfiqar Ali Brohi-Social Mobilizer***

Mr. Brohi is responsible for capacity building and skills enhancing activities for communities and focused groups and coordination with media to sensitize the communities regarding sociopolitical, socioeconomic and gender issues.

### **7.2 Drinking Water Supply to Local Community**

Zorlu is providing drinking water from Keenjhar Lake to the local communities through mobile water tankers. Local communities includes Urs Jhakro, Allah Bux Gujjo, Abbas Mir Bahar, Ahsan Ali Palari, Khamiso shoro, Suleman Palari , Musa Utho and Latho Gaijo residing near the wind farm site. Zorlu is also trying to provide sufficient amount of drinking water by increasing the numbers of water tankers for every village to meet the community basic requirements.

Water tankers are provided in routine as below mentioned:

- Basho jakhra 2 tankers in month.
- Village Ganja 14 tankers in month
- Haji Suleman Brohi 14 tankers in month

Capacity of tanker is 12000 litres

It is suggested that Zorlu may provide tube-well/pressure pump in village at some central location so that the residents can fetch water for drinking and other purposes. This is an important step towards the implementation of Community Development Plan.

### **7.3 Promotion of Education among Local Communities**

From education point of view, village Ahsan Ali Palari has improved like 2 primary schools and 1 higher secondary school is established in vicinity at 500m distance. Zorlu is committed to provide input towards the social well-being through promotion of education in the area.

Zorlu previously appointed a religious teacher at Goth, Brohi who has been providing the Quran education to the females of the village. Goth Brohi is located at the distance of about seven kilometers from project site. People of this village were in dire need of such education for their girls. In response to that, Zorlu has taken this initiative, and is still supporting the Religious Teacher of Brohi Goth.

### **7.4 Flood Relief Activities**

During the flood of 2011 in Thatta and adjoining coastal areas, Zorlu participated in flood relief activities in association with local welfare organization (Patarian Association). Zorlu provided about 150 shelter tents to the flood affected communities.

### **7.5 Coordination with Local Welfare Organizations**

Zorlu has established sound coordination with Non-Government Organizations (NGOs) and developmental partners in the area such as World Wide Fund for Nature (WWF), Keenjhar Youth Welfare Development Organization (KYWDO) and National Commission for Human Development (NCHD).

In response to community development plan, Zorlu has started initiatives particularly in education and skill development sector as previously discussed. In March, 2012, an agreement was signed with Keenjhar Youth Welfare Development Organization (KYWDO) Jhimpir. According to the agreement, Zorlu will sponsor the KYWDO computer center on recommendation of World Wide for Nature/Indus for all Programs (WWF-Indus for all programs).

So far, KYWDO, computer center has provided basic computer trainings to approximately 92 boys and 35 girls. Major training courses conducted at computer center include: i) 4 months computer short courses; ii) Introduction to windows; iii) typing tutor; iv) MS Office; v) Basic knowledge of internet.

It is to mention here that coordination and support to KYWDO is not in practice since January 2015.

### **7.6 Employment Opportunities for Local Community**

Zorlu provides employment opportunities to the local people on priority basis. Total 14 local people have been appointed during O & M phase. On the basis of skills and qualifications, local people have been working on various positions at Zorlu Wind Farm including security, masonry, engineering, store keeping, social works and labor. List of local people working at Zorlu wind farm during O & M phase is provided at **Annexure D**. In a village namely Urs Jhakro employment ratio has increased upto 20%. Due to developmental activities and the investment of international companies in the area, the job opportunities are available for the local community.

## **7.7 Jhimpir Area Up-Gradation Program (JAUP)**

Jhimpir region is known as wind corridor of Pakistan as it has immense potential of Wind Power. Many wind farms are operational in the region, several wind farms are in construction phase and LOI's are issued to numerous wind farms. As so many wind farms will be operational in the area and these wind farms are bound under CSR to invest in development of the local area. It is need of hour to revive Wind Farm Power Producer Association in true sense to make working group and common pool of resource to start productive vital intervention in the area. This working group will give course to development work in the area and will lead to true sense development in the area. These steps will be helpful in changing the fate of the area. Under this three plans are proposed Details are as under;

### **7.7.1 Area Ecology Up-Gradation Plan (AEUP)**

Keenjhar Lake, second largest wetland large wetland of Pakistan, which is an internationally recognized migratory birds' hotspot is situated at a distance of 24km eastwards. It has 13,450 ha area. Its length is 24 km and width 6km. It is important wintering area for the migratory waterfowl and several species of passerine birds, which roost for the night in the tall and thick water reeds that grow at the shallow edges of the lake. This is also a breeding area of local wetland birds. Although it is a Ramsar site and wildlife sanctuary, yet extensive commercial fishing is practiced in it. That causes considerable disturbance for migratory birds, in addition to the disturbance caused by the considerable tourism, particularly during the winters. That has caused gradual but significant decline in the number of wintering migrants.

Wind Power Producers Association (WPPA) is interested in AEUP for ecology up gradation. For this purpose, both components of ecosystem i.e. biotic and abiotic will be up-graded.

### **7.7.2 Sweet Water Enhancement Program**

As of now, the main source of water in Jhimpir is rainfall. The maximum rainfall occurs between months of July and September. Currently, there is no proper water harvesting

system in the area. As a result, most of this rain water is wasted through percolating and mixing with the saline ground water. Some of this water ends up in the ocean via different water ways. The demand of sweet water is very high in area and it is need of hour to conserve this rain water so that basic water necessities of area can be fulfilled.

### 7.7.3 Socio-Economic Upliftment Plan

To obtain the target of socio-economic Upliftment some suppositions are made and way & means are devised. All stakeholders will be requested to present suggestions/proposal/ advise/ requirement in the workshop for achievement of targets of social Upliftment program. However comprehensive set of ways and means will be prescribed during feasibility study to achieve desired targets of social Upliftment program. Due respect will be given to stakeholders opinion while preparing the program details.

### 7.8 Promotion of Procedures for (a) Hiring and; (b) Acquisition of Local Goods and Services

Zorlu provides maximum possible opportunities to the local people and local market for acquisition of goods and services. Following services and goods are acquired from local market and local people for O&M phase of the project:

- Water supply contract has been awarded to the local supplier of Jhampir. Zorlu has engaged a single water supply contractor which is authorized to engage any local person for water supply business. Water tankers belonging to multiple people have been rented for supplying water to wind farm.

### 7.9 Stakeholder/Community Consultation at 7<sup>th</sup> Year of the Project Operation

At 7<sup>th</sup> year of the project implementation community consultation has been carried out. Its methodology and results are given below;

#### 7.9.1 Stakeholder Under ISO/DIS 2600

Key **stakeholders** in a business organization include creditors, customers, directors, employees, government (and its agencies), owners (shareholders), suppliers, unions, and the community from which the business draws its resources

A **corporate stakeholder** can affect or be affected by the actions **of** a business as a whole. Whereas shareholders are often the party **with the** most direct and obvious interest at stake in business decisions, they are one **of** various subsets **of**



**stakeholders**, as customers and employees also have stakes in the outcome. Following are the types of the stakeholders.

- i. Customers. Stake: Product/service quality and value
- ii. Employees. Stake: Employment income and safety
- iii. Investors. Stake: Financial returns
- iv. Suppliers and Vendors. Stake: Revenues and safety
- v. Communities. Stake: Health, safety, economic development
- vi. Governments. Stake: Taxes and GDP.

**Stakeholders** are responsible for reviewing the financial data of the company to ensure that the business is performing well and that they are not losing their investment. They may also be responsible for voting on allocation of certain funds.

### 7.9.2 Selection of stakeholder for consultation

Out of the five stakeholders enlisted at 7.9.1. NTDC/STDC which is the customer remains in touch continuously for power demand and communicate their response regarding power supply efficiency on daily basis. Employees usually communicate with their relevant manager to resolve their issues. While lenders visit periodically and send observations to the proponent which are well attended. Suppliers and vendors also remain in regular contact for the supply of items like food, stationary etc. and collection of wastes.

In nut shell, all the other stakeholders are in communication by one or other way but the community never finds the appropriate opportunity to approach and give feedback to the proponent regarding availed benefits through this project or any issue encountered. Although Grievance Redressal System (GRS) is in place but employees get benefit from this opportunity and community have never registered any grievance mostly. Therefore priority has been given to the community for formal consultation.

### 7.9.3 Method of community consultation

Usually common needs are addressed under corporate social responsibility. Further to it Goths are very small in size of population (varies from 10 to 15 families). Therefore, instead of Individual consultation tool of FGD is selected for common consultation. Focused group discussion is carried out with whole population instead of selecting sample out of available statistical population size to avoid the sample bias as well as sample error.



Consultant team visited three nearby Goths to conduct the FDG proforma and pictorial story is given at **Annexure I**

#### **7.9.4 Results of stakeholder consultation**

FGD is carried out in three goths namely **Ladho Ganjo Goth, Urs Muhammad Jakhro Goth and Atho Goth**. Results are given in Table below;

Sr. #	Question	Response
<b>Ladho Ganjo Goth</b>		
1	Are you satisfied with the operation of the Wind Farm Project in your area?	Yes
2	If yes, what impacts do you think, project may have in your area? (Education, health, house, agriculture, livestock, trees, water, fish religious and other facility buildings, employment opportunities, impact on rural to urban migration, sanitation, drinking water, transport, fuel and other energy sources such as electricity and gas connection)	<ul style="list-style-type: none"> <li>• Employment, drinking water and building</li> </ul>
3	In case of any negative impact(s), what you suggest to minimize the impact?	None
4	What type of benefits are availed through CSR?	<ul style="list-style-type: none"> <li>• Education, water, building, women empowerment, houses and plantation</li> </ul>
5	Comments/suggestions to improve CSR activity.	<ul style="list-style-type: none"> <li>• Need electricity</li> <li>• Need better business environment</li> <li>• Need help in farming regarding water arrangement</li> </ul>

<b>Urs Muhammad Jakhro Goth</b>		
1	Are you satisfied with the operation of the Wind Farm Project in your area?	Yes
2	If yes, what impacts do you think, project may have in your area? ( Education, health, house, agriculture, livestock, trees, water, fish religious and other facility buildings, employment opportunities, impact on rural to urban migration, sanitation, drinking water, transport, fuel and other energy sources such as electricity and gas connection	<ul style="list-style-type: none"> <li>• Drinking water, livestock, employment health and transport</li> </ul>
3	In case of any negative impact(s), what you suggest to minimize the impact?	None
4	What type of benefits are availed through CSR?	<ul style="list-style-type: none"> <li>• Water</li> </ul>
5	Comments/suggestions to improve CSR activity.	<ul style="list-style-type: none"> <li>• Need electricity</li> <li>• Life is very difficult in the area. May initiate such projects which make the life easier.</li> </ul>
<b>Atho Goth</b>		
1	Are you satisfied with the operation of the Wind Farm Project in your area?	Yes

2	If yes, what impacts do you think, project may have in your area? ( Education, health, house, agriculture, livestock, trees, water, fish religious and other facility buildings, employment opportunities, impact on rural to urban migration, sanitation, drinking water, transport, fuel and other energy sources such as electricity and gas connection	<ul style="list-style-type: none"> <li>• Employment</li> </ul>
3	In case of any negative impact(s), what you suggest to minimize the impact?	<ul style="list-style-type: none"> <li>• No negative impacts</li> </ul>
4	What type of benefits are availed through CSR?	<ul style="list-style-type: none"> <li>• Health facilities, education, mosque, water availability (but not fulfilling the requirements) and availability of the ambulance</li> </ul>
5	Comments/suggestions to improve CSR activity.	<ul style="list-style-type: none"> <li>• Need electricity</li> <li>• Need road</li> </ul>

## 8. IMPLEMENTATION STATUS OF MITIGATION MEASURES IN ESMP

Environmental and Social Management Plan (ESMP) was prepared to address the environmental and social requirements of O&M phase. Environmental and social compliance monitoring for O&M phase was awarded to Élan Valorisation (Pvt.) Ltd. in August, 2014. ESMP for O&M phase has been revised to update existing ESMP prepared at the time of preparation of EIA report. Formal implementation of ESMP was started during the month of August, 2014 after the environmental and social training imparted by the Élan Valorisation to the project staff and workers particularly to the people involved in the implementation of ESMP including HSE Manager of O & M contractor.

Data Record Sheets (DRS) had been developed for monitoring the compliance with ESMP as well as for effect monitoring<sup>2</sup>. DRS for both compliance monitoring and effect monitoring are filled and signed by the ESO under the supervision of ESI as per frequencies suggested in Data Record Plan (DRP)<sup>3</sup>.

As mentioned earlier, Environmental and Social experts of Élan Valorisation visit the wind farm site on quarterly basis and quarterly environmental and social monitoring reports are prepared and submitted to the Zorlu Enerji Pakistan Limited. Quarterly monitoring reports highlight the status of environmental compliance, deficiencies and shortcomings and provide with recommendations for future improvements in accordance with national and international environmental standards including mainly the Pakistan Environmental Protection Act, 1997, Pak-EPA guidelines, Environmental and Social Review Procedures of the IFC and World Bank Operational Policies as applicable to the project with particular focus to monitor the compliance with Environmental and Social Management Plan (ESMP) and EIA. Annual report is also prepared after end of every calendar year to present cumulative picture of the year.

### 8.1 Existing Status of Environmental Compliance at Zorlu Wind Farm

Summary of environmental management and compliance with EIA and ESMP during the reporting period (January to December, 2018) has been provided in **Table 8-1** below. First column of the table indicates the environmental and social parameters; whereas second and third columns indicate the existing status of environmental and social management against each parameter and highlights the deficiencies and improvement measures required respectively.

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<sup>2</sup> Effect monitoring was the part of ESMP to monitor the effectiveness of mitigation measures proposed in ESMP

<sup>3</sup> Data Record Plan has been developed in order to schedule the monitoring activities which includes the monitoring frequencies, monitoring locations and monitoring responsibilities

**Table 8-1: Existing Status of Environmental Compliance at Zorlu Wind Farm**

Environmental and Social Parameter	Compliance Status	Shortcomings and Recommendations
Air Quality	<ul style="list-style-type: none"> <li>• In compliance with ESMP, Air Quality Monitoring Plan (AQMP), has been prepared by EPC contractor;</li> <li>• Air quality is monitored in accordance with the requirements set in DRS and DRP;</li> <li>• Water sprinkling is practiced as appropriate at locations of potential dust emissions;</li> <li>• Project vehicles and machinery is tuned and maintained in good working conditions.</li> </ul>	<ul style="list-style-type: none"> <li>• Dust separation measures on long term basis like growth of vegetation need to be initiated in appropriate/planned manner as suggested at 7.7</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Noise Monitoring Plan (NMP) has also been prepared and implemented at relevant project locations;</li> <li>• Noise monitoring is being carried out at relevant locations.</li> </ul>	
Water Quality	<ul style="list-style-type: none"> <li>• For drinking purposes, most of the time, potable mineral water purchased from some certified companies is being used at project site;</li> <li>• Contractor has installed commercial scale water treatment plant at construction camp which works on Reverse Osmosis (RO) technique of water purification from salts and other unwanted agents. The treated water is mainly used for bathing and washing purposes for workers/staff. Water quality of treated water is monitored on monthly basis to analyze its fitness for drinking purposes.</li> <li>• To ensure the proper functioning, filtration membranes of RO plant are replaced on weekly basis.</li> <li>• Refused water from RO plant is being stored in wastewater collection pond.</li> </ul>	<ul style="list-style-type: none"> <li>• Filtration membranes of water treatment plant should be replaced periodically to ensure the better quality water;</li> <li>• Laboratory test of RO waste water should be carried out.</li> <li>• Frequent leakages in RO plant components need to be addressed comprehensively.</li> </ul>

Environmental and Social Parameter	Compliance Status	Shortcomings and Recommendations
Soil Contamination	<ul style="list-style-type: none"> <li>Oil spillage from fuel storage containers and generators may contaminate the soil. As an existing practice, polythene sheets have been spread beneath the fuel containers and generators to avoid the soil contamination from oil leakages and spills;</li> </ul>	<ul style="list-style-type: none"> <li>Polythene sheets used for collection of waste oil should be replaced regularly;</li> <li>Used gear oil be reused or disposed off appropriately</li> </ul>
Solid Waste Management	<ul style="list-style-type: none"> <li>Solid Waste Management Plan (SWMP) has been prepared and implemented at project site.</li> <li>Non-hazardous waste produced per day ranges from 50-75 kg of 80 workers at camp site</li> <li>Hazardous waste i.e. batteries etc., are collected by local hazardous waste collection company for disposal.</li> <li>As the existing practice, solid waste is collected from all locations at wind farm and dumped at waste dump site located away from the O&amp;M camp.</li> <li>Empty water bottles and other containers are separately collected and stored for the scavengers.</li> </ul>	<ul style="list-style-type: none"> <li>Need to check the status of license of hazardous waste collection vendor. It is pertinent to mention here license is issued by concerned EPA after checking the environmental aspects of practice of the vendor for disposal of waste</li> </ul>
Waste Water	<ul style="list-style-type: none"> <li>Separate septic tanks for collection of grey (water from kitchen and washing and bathing) and black water (water from toilets) have been constructed at O&amp;M camp;</li> <li>Septic tanks for waste water and rain water have also been constructed at O &amp; M control building;</li> <li>Septic tanks are emptied when required. Waste water from tanks is sucked into mobile waste water tanks and released at some suitable locations with prior consent of land owners.</li> </ul>	<ul style="list-style-type: none"> <li>Need to check the status of license of waste water collection vendor. It is pertinent to mention here license is issued by concerned municipality after checking the environmental aspects of practice of the vendor for disposal of waste.</li> </ul>
Flora, Fauna and Bird Monitoring Plan	<ul style="list-style-type: none"> <li>Zorlu Wind Farm is located at barren land near Jhimpir town in Thatta District, Sindh. Due to coarse and sandy soil structure, natural vegetation is scarce in the area except widely spaced shrubs and</li> </ul>	<ul style="list-style-type: none"> <li>Compensatory plantation of native floral species or alternative arrangements should be, as the plantation of drought and salt loving grasses may be started;</li> </ul>

Environmental and Social Parameter	Compliance Status	Shortcomings and Recommendations
	<p>bushes. Wild bushes from small patches of land were cut to clear the land for construction activities of wind farm;</p> <ul style="list-style-type: none"> <li>• Likelihood of bird mortality has been identified in EIA report as potential negative impact of Zorlu Wind Farm. Migratory birds coming from Siberia may encounter with wind turbines during their staging at Keenjhar Lake located near the wind farm. It was recommended in the EIA report that Bird Monitoring Plan (BMP) should be prepared and implemented at wind farm;</li> <li>• Accordingly, BMP was developed by Élan Partners (Pvt) Ltd and approved in 2012. In compliance with the BMP, bird monitoring is being carried out at wind farm. On the basis of bird monitoring data, bird monitoring report for the reporting period is being prepared. The process of bird monitoring and findings of bird monitoring report have been provided at <b>Annexure E</b>.</li> <li>• Further as a mitigation measure, wind turbines at Zorlu Wind Farm have colored blades to facilitate the migratory birds so that they can visualize and sense the presence of these alien structures (wind turbines) from far of distance and height.</li> </ul>	<ul style="list-style-type: none"> <li>• Zorlu Energy should maintain close coordination with wildlife department and WWF throughout the period of project operation and maintenance.</li> <li>• Bird monitoring study is concluded. Concluding statement and relevant data is at Annexure F. Some representative data is given in the annexure. Data tabulation and analysis is in progress and will be made part of next annual report</li> <li>• It is suggested that a tree plantation drive should be carried out twice in a year in which maximum trees should be planted to improve vegetation in the area.</li> </ul>
Workers Health and Safety	<ul style="list-style-type: none"> <li>• Zorlu O&amp;M has established and implemented the EHS Plan for O&amp;M phase of the project.</li> <li>• Well experienced and qualified HSE Engineer has been appointed by O &amp; M contractor to look after the matters related to workers health and safety;</li> <li>• Availability and use of Personal Protection Equipment's (PPEs) have been observed as common practice at Zorlu Wind Farm. However, due to habitual reasons, some workers are always reluctant to the use of PPEs;</li> <li>• Equipped first aid room has been maintained at O&amp;M camp<sup>4</sup>. Qualified dispensers are available twenty four hours for emergency treatments and first aids. Services of doctor are also available in case of severe emergencies which is available at site on phone call. Record of first aid</li> </ul>	<ul style="list-style-type: none"> <li>• Trainings related to health and safety matters should be provided to the workers/employees on regular basis during the operational phase of the project;</li> <li>• Moreover there should be compulsory induction training for every new worker covering all necessary information such as; introduction to work environment; introduction to possible work place hazards; self-protection and escape measures etc.;</li> <li>• All the trainings should be arranged keeping in view the literacy level and language of the workers/employees;</li> </ul>

<sup>4</sup> Formerly used as construction camp during construction phase of the project.



Environmental and Social Parameter	Compliance Status	Shortcomings and Recommendations
	<p>medicines is properly maintained with their expiry dates. First aid data is recorded on daily basis in separate register including the details such as name of patient, nature of illness, treatment/medicines provided. On the basis of first aid records, first aid report is prepared on weekly basis. First aid arrangements have also been maintained at control building and grid station.</p> <ul style="list-style-type: none"> <li>• An ambulance equipped with basic first aid facilities is available 24 hours at project site;</li> <li>• Proper trainings are provided to O &amp; M staff related to firefighting, first aid, work permit including work at height, use of PPEs, risk assessment and other health and safety measures. Training records are properly maintained on specific training record sheets which is provided at <b>Annexure M</b>;</li> <li>• Risk assessment sheets are also developed for risk analysis. A sample risk assessment sheet is provided at <b>Annexure G</b>.</li> <li>• HSE Manager regularly monitors the workers' health and safety. On the basis of HSE monitoring, weekly progress report is prepared.</li> <li>• Fire extinguishers have been installed at various project locations such as O&amp;M camp, grid station and control building. All fire extinguishers are inspected on monthly basis to ensure that they are working properly;</li> <li>• Material Safety Data Sheets (MSDS) have been made available for all chemicals and hazardous material used during the O&amp;M works of wind farm. O &amp; M contractor has established an Emergency Response Procedures (ERP) to address the protection of life, health, safety, environment and property during emergencies at control building. ERP for control building.</li> <li>• O &amp; M contractor has also established and implemented EHS Regulations for Zorlu wind farm. These EHS regulations address the health and safety measures for operators and technicians during its entirety after performing any work in wind turbines.</li> </ul>	<ul style="list-style-type: none"> <li>• Design and use of PPEs should be such that it is compatible with harsh weather conditions in order to minimize the ergonomic hazards which are related to the working conditions at site.</li> <li>• Safety drills should also be conducted on regular basis.</li> <li>• Training workshop on CSR should be conducted in year 2020.</li> </ul>

Environmental and Social Parameter	Compliance Status	Shortcomings and Recommendations
Community safety and security	<ul style="list-style-type: none"> <li>No human population exists within the close vicinity of the wind farm site. Proper safety measures need to be adopted during the project O&amp;M phase to ensure community safety and security due to the operation of wind turbines and electricity generation. Therefore as the safety measures during O &amp; M phase, all wind turbines have properly fenced and gated to avoid any unauthorized entry into the arena of wind turbine. Moreover security towers have also been established all around the wind farm to look after the farm for twenty four hours.</li> </ul>	
CO <sub>2</sub> emissions by the project	<ul style="list-style-type: none"> <li>Wind energy is considered as green energy all over the world with no atmospheric emissions. However during the O&amp;M phase of the project, small scale air emissions can happen due to vehicular and machinery exhausts and use of fossil fuels in power generators. These emissions are less significant at Zorlu wind farm as mitigation measures including maintenance of vehicles and generators are strictly adopted. Therefore CO<sub>2</sub> emission has least contribution to atmospheric emissions.</li> </ul>	<ul style="list-style-type: none"> <li>All vehicles and generators should be tuned regularly.</li> </ul>
Workers Camps	<ul style="list-style-type: none"> <li>The camps were established to accommodate the workers during the construction period of the project. Currently, 65-80 workers stay in the camps. <b>Annexure - I</b></li> </ul>	<ul style="list-style-type: none"> <li>Appropriate accommodation should be establishing on priority as per IFC workers' accommodation guidelines.</li> </ul>

## **9. COMPLIANCE STATUS OF COMPREHENSIVE COMMUNITY DEVELOPMENT PLAN (CCDP)**

As stated earlier, Comprehensive Community Development Plan was prepared and approved in 2012 as one of the requirements of EIA implementation. The CCDP provides a framework for decision making and to establish a set of specific recommendations for future social development in the area. It is intended to provide implementation guidance.

As the requirements and socio economic conditions of the project area have changed with time. Zorlu updated the CCDP for uplifting the social and livelihood conditions of the community as well as to check the compliance status of CCDP.

### **9.1 CCDP Priority Areas Implementation Status**

Following priority areas for intervention have been identified in updated CCDP:

#### **9.1.1. Water and Sanitation**

Zorlu is providing drinking water with water tankers. The company can provide tube-well in the future terms and also, water treatment and desalination plant where required may be installed to provide safe drinking water to the community.

While considering sanitation, the company may not need investment as this is the responsibility of the government. However, they (Company) can encourage the residence for hygienic practices and developing the sanitation system on self-help basis.

#### **9.1.2. Health**

According to the CCDP, the Company could establish medical camps in the area where necessary advices including vaccination and training to women for disease could be provided. Such medical camps could be arranged on quarterly or half yearly basis. The main objective of this activity could be vaccination and disease assessment.

This area is also un-attended due to the same problem of communication with local communities as stated earlier. It can also be implemented in coordination with some local NGO. It is suggested that support may be provided to Lady Health Worker (LHW) networks. However Zorlu provides transportation/ambulance facility in case of emergency situations to the villagers. New initiative of medical camps was started in 2018 which has turned into a good service to the community in very short period of time.

#### **9.1.3. Education**

As stated in CCDP, the literacy rate in the vicinity area is very low because most of the schools in project area don't have skilled teachers. Zorlu is working on its behalf

to improve this situation. In this regard distribution of educational material where necessary and vocational training for persons aging between 15-35 can improve the situation.

As stated earlier in this report, Zorlu has appointed religious teacher to provide Quran education to local females. Again by the involvement of some local NGO, proper measures can be taken by Zorlu to improve the education facilities in the area.

#### **9.1.4. Traditional Home Embroidery**

It is required by CCDP that, machines for sewing, stitching, embroidery, and beauty parlor equipment be provided to local females and necessary training should also be provided to females by the company.

It was informed by the Zorlu that sewing machines have been provided to the females in some areas of Jhimpir union council. Further implementation of this priority area of CCDP requires some local NGO to play coordination role.

#### **9.1.5. Communication/Transport**

As reported in CCDP, there is no facility of transport available in the area. Consequently in case of any emergency particularly at the time of child birth and other health emergencies, they cannot reach to a nearest hospital which is located at Thatta. Therefore provision of some emergency transport service to take patients to a nearby hospital could be made by the company.

Transportation service provided is sufficient. However, if any need arises from the community from time to time then it can be seen on a case basis in the future. In case of medical emergencies, ambulance at wind farm is made available to drop the patients to nearby hospital.

#### **9.1.6. Agriculture**

According to the recommendations of CCDP, one of the goals of Zorlu's should be to initiate agricultural development programs by providing seeds (cheap and easily available in market) fertilizer to the farmers having small land holding (3 to 5 acres) which really would help them in increasing their income. Focusing on families with small holdings and farmers with three acres or less, it has to introduce a range of options from systems to improve yields to small scale vegetable farming by only providing them seeds could make their life easy.

#### **9.1.1 Grievances Redressal Mechanism**

ZEPL has developed and implemented a grievance redressal mechanism to resolve the complaints in an effective and timely manner. According to stakeholder engagement plan ZEPL is committed to ensure security and privacy of community. There is a grievance redressal mechanism through which any complaint or demand by local community registered, addressed and compensated. A complaint register is

maintained at camp site in which all complaints are recorded. The person responsible for the record keeping also conveys the complaints to the higher authorities to resolve the issues. Following are the complaints received in the year 2019 which are in progress.

**Table 9-1: Grievances/Complains from Local People & Respective Corrective Actions by ZEPL**

<b>S. No</b>	<b>Grievance</b>	<b>By whom</b>	<b>Record by Client</b>	<b>Corrective action</b>
<b>1.</b>	Hiring of Teacher for school	People of Village Ladho Ganjo	Application has been sent to higher management	In progress
<b>2.</b>	Supply of water tank once in a month	People of Village Khamiso Shoro	Application has been sent to higher management	In progress
<b>3.</b>	Demand of Solar Plate	People of Village Suleman Brohi	Application has been sent to higher management	In progress

## 10. CONCLUSION

Conclusion drawn about environmental performance after monitoring of Zorlu Wind Farm is given below in annotated form;

- i. Overall status of environmental and social compliance at Zorlu wind farm is satisfactory during the reporting period (January 1, 2019 to December 31, 2019)
- ii. ZEPL has made considerable arrangements related to environmental and social aspects of the project.
- iii. ZEPL is well conscious of the environmental and social considerations and relevant laws/regulation.
- iv. Keeping in view the findings of bird monitoring at site, bird monitoring needs to be stopped and a conclusive report needs to be submitted.
- v. The firefighting system is operational after completion of maintenance work. This is also a step toward environmental compliance.
- vi. Long outstanding issue of pressure of eye washer in the battery room has been resolved which is appreciable.
- vii. Paramedical training has been imparted to medical dispenser which is a good step toward improvement of medical facility at the camp site.

## 11. RECOMMENDATION

Recommendation for improvement of environmental performance at Zorlu Wind Farm is given below in annotated form;

1. Firefighting drill should be conducted on bi-annual basis;
2. Indoor natural plants need to be looked after and improved in number and variety on regular basis.
3. In house trainings to staff regarding environment, health and safety need to be imparted on regular basis.
4. The disposed water of drainage and RO plant should be get tested to see if it can be used for vegetation purpose.
5. Vegetation (Grasses/shrubs/plants/trees/herbs) must be grown to improve the horticulture in the plant area.
6. Need to improve work on CSR activities.
  - i. CSR Workshop may be conducted to impart CSR Training to Zorlu staff and highlight activities under CSR
  - ii. For the provision of electricity to neighboring Goths may be provided. Survey and cost estimate is placed at **Annexure I**
  - iii. Appointment of teacher in village of Ladho Ganjo should be carried out under CSR activities.
  - iv. Agricultural development programs may be initiated by providing seeds (cheap and easily available in market) fertilizer to the farmers having small land holding (3 to 5 acres) which really would help them in increasing their income
7. Zorlu is ready to proceed coordinately with neighboring Wind farms for water, education, agriculture matters. In this regard, it is recommended that IFC should bring other clients on same platform so that CSR activities in the area can be carried out in coordinated and efficient manner.

**Annexure A**  
**Environmental and Social Monitoring Team**



**Naveed ul Haq**

Dr. Naveed ul Haq is a senior Urban Planner and Environmental Expert. He is currently working as Director Environment and Spatial Planning in Élan Partners. He is Ph.D. Scholar in Environmental Friendly Urban Planning from Islamic International University. He is IOSH and Lead Environmental Audit Qualified. He is life time member of Pakistan Council of Architects & Town Planners (PCATP), and Member of International Society of City & Regional Planners (ISOCARP). He graduated in City and Regional Planning from University of Engineering and Technology, Lahore in 2000. He completed his Master's Degree in City and Regional Planning from the same university in 2004. Apart from this, he did BA in Economics and Sociology in 1997 and MA in Economics in 2000 from Punjab University, Lahore. After working for 16 years with corporate as well as Government sector, Dr. Naveed ul Haq joined Élan Partners in 2016. Till now, during his stay in Élan, he has successfully completed numerous projects whose nature vary from spatial planning, environmental management to public private partnership.

**Muhammad Amir**

Muhammad Amir is skilled, motivated and punctual individual who is currently serving as Assistant Manager Town Planning in Environment and Spatial Planning Department. He graduated in City and Regional Planning with Special interest in Environmental and Social Management from University of Engineering and Technology, Lahore in June 2016 and joined Élan Partners in August 2016. He addresses tasks related to spatial planning apart from assisting environment team. So far, he has completed two EIA projects of Shalfalam Hydropower Project and 1320 MW Coal Fired Power Plant at Jamshoro, apart from this he is working on Master Planning of housing schemes. He is looking forward to polish his skills while working at Élan Partners.

**Maliha Masood**

Ms. Maliha Masood works as an Environmentalist at Élan Valorisation (Pvt.) Ltd. Her B.S degree in Environmental Sciences from Comsats University of Science and Technology, Abbottabad. She has profound insight in Environmental Impact Assessment (EIA), Environmental Management System (EMS) and Natural Resource management (NRM). Her major research area is Environment and Nanotechnology. She has an interest in National and International Environmental Legislation/Policies and Environmental Agreements.

### **Waqas Ahmad**

Mr. Waqas Ahmad is working as Assistant Manager Environment along with Élan Partners (Pvt.), Ltd. He holds M.Phil and M.Sc Degree in Environmental Sciences. He is NEBOSH ICG qualified from UK. He is Environmentalist by nature and nurture. He has conducted/reviewed/examined various IEE/EIA studies of various Power Plants / Wind Energy Projects / Construction and Industrial Complexes within the country. He has attended several training related to EIA, Water testing and Health & Safety. He has also carried out water quality testing in various areas throughout Pakistan.

### **Ayesha Naveed**

Mrs. Ayesha Naveed is highly motivated and goal driven environmentalist coupling relevant practical experience of more than 7 years with master's degree in environmental sciences. She is PhD scholar. She has proven work experience in field of environment as she has been a part of team working on resilience aspect in environmental sustainability study in 25 districts of KPK and has also conducted various EIAs and IEEs. She has broad understanding and has produced research papers on climate change and other such global environmental issues. She has written at least five research papers addressing EIA, climate change, global warming and city resilience. Main emphasis of these research articles was EIA practices in Pakistan and its relationship to sustainability and contribution of mega projects to climate change which ultimately affects the environmental resilience. She has discussed the climate with perspective of water issue particularly river flow and achieving millennium development goals (MDGs). Environmental resource consumption in relationship to population growth, city resilience and climate change is her special topic of interest and area of expertise. She has also participated on various forums to give her valuable input including training on "Adopting Sustainable Consumption and Production (SCP) to Pakistan Context by UNEP, Switchasia, EU.

#### **List of Professionals indirectly involved in Project:**

<b>S. No.</b>	<b>Name</b>	<b>Specialization</b>	<b>Position in the Project</b>
<b>1.</b>	S Anwar Raza	Chief Executive Officer	Chief of Party
<b>2.</b>	Hassan Imtiaz	System/Web Administrator	Report Formatting

**Annexure B**  
**Accident Report Form**

<b>ZORLU O&amp;M</b> <small>POWERPLANTS OPERATION AND MAINTENANCE</small>	DOCUMENT NAME	ACCIDENT REPORT FORM	PUBLICATION DATE	00.00.2014
	DOCUMENT NR.	ZOM-PAK-10.001	REV. NR.	
	DEPARTMENT	Zorlu O&M Pakistan Wind Farm	REV. DATE	
	PAGE NR.	1 / 2	REV. REASONS	

Details of Person completing the form			
Name			Date
Job title			
Accident	Dangerous occurrence	Near Miss	Illness
Details of Injured Person			Age/DOB
Address of Injured Person			
Telephone:			Occupation;
Employers Name			
Managers Name			Telephone
Company Address:			

Accident Details	
Location of Accident/Incident	
What work was occurring at the time of accident:	
<b>Summary of the accident and the injury caused (part of body and severity):</b> (attached additional pages if necessary)	

PREPARED BY	CONTROL BY	APPROVED BY

<b>ZORLU O&amp;M</b> <small>POWERPLANTS OPERATION AND MAINTENANCE</small>	DOCUMENT NAME	ACCIDENT REPORT FORM	PUBLICATION DATE	00.00.2014
	DOCUMENT NR.	ZOM-PAK-10.001	REV. NR.	
	DEPARTMENT	Zorlu O&M Pakistan Wind Farm	REV. DATE	
	PAGE NR.	2 / 2	REV. REASONS	

**Who witnessed the accident?** (state names, employer, and contact details)

**First Aid Details:**

For Office Use Only	
Accident Category	
Follow up Action	

PREPARED BY	CONTROL BY	APPROVED BY

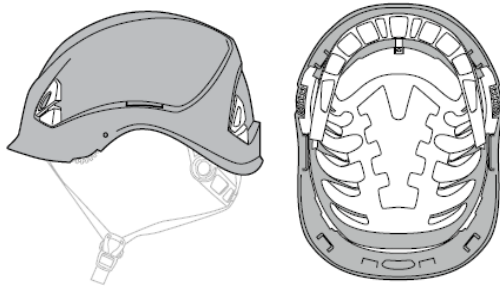
**Annexure C**  
**PPEs Inspection Sheet**

**ZORLU O&M PAKISTAN WIND FARM  
FALL PROTECTION (LADDER AND RAIL) CONTROL FORM**

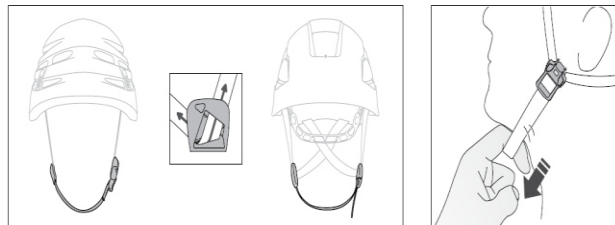
**DOC: ZOM\_PAK\_F4.09.Rev01**

This control form prepared for HELMET (PETZL) visual and functional performing test according to the manufacturer's instructions and HSE regulations.

**Control Positions**



**Checking the shell**



**Checking the chin strap**



**Checking the adjustment system**



**Checking the liner**



**Checking the headband**

<b>Responsible Department :</b>	Zorlu O&M Pakistan Wind Farm		
<b>Turbine no:</b>			
<b>Lift NO. :</b>			
<b>Model No:/Type</b>	VERTEX® ST		
<b>Manufacturer / Dealer :</b>	PETZL		
<b>Testing Date:</b>			
<b>Purchase Date :</b>			
<b>Test Period</b>	PPES will be checked by visual and functional inspection in every use. Every 3 months the fall protection system checked by visual and functional inspection form will be filled. Control form, Mechanical Engineer, HSE Specialist and user will be signed.		
<b>1.Control</b>		<b>Date:</b>	
Controlled By	HSE Specialist	User	
<b>2.Control</b>		<b>Date:</b>	
Controlled By	HSE Specialist	User	
<b>3.Control</b>		<b>Date:</b>	
Controlled By	HSE Specialist	User	
<b>4.Control</b>		<b>Date:</b>	
Controlled By	HSE Specialist	Inspection by	



[illegible]

[illegible]

### C. Checking the liner & Checking the cradle (webbing head harness)

[illegible]

### D. Suspension/Wires/Cable

[illegible]





**5. Control results**

**Helmet is safe for use**

☐☐☐☐☐☐☐☐

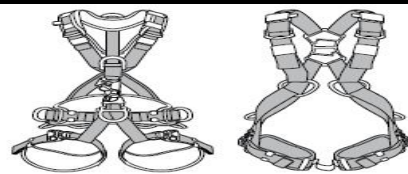
**Inspection Date:**

**Next Inspection Date:**

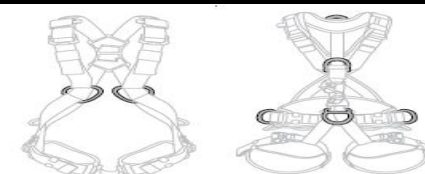
**If the HELMET use is prohibited, mark the as faulty or damage.**

This control form prepared for FULLY BODY harness visual and functional performing test according to the manufacturer's instructions and HSE regulations.

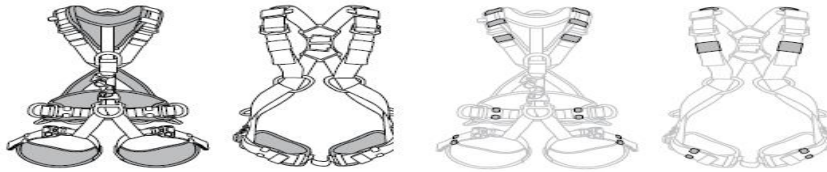
### Control Positions



Checking the condition of the straps



Checking the attachment points

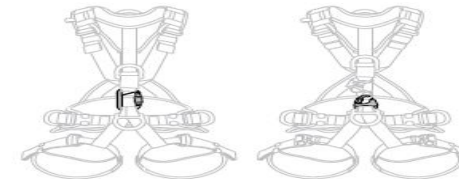


Checking the condition of the comfort parts

Checking the condition of the adjustment buckles



Checking the condition of the chest/seat harness connector



<b>Responsible Department :</b>	Zorlu O&M Pakistan Wind Farm		
<b>Turbine no:</b>			
<b>Lift NO. :</b>			
<b>Model No:/Type</b>			
<b>Manufacturer / Dealer :</b>	AVANTI		
<b>Testing Date:</b>			
<b>Purchase Date :</b>			
<b>Test Period</b>	Fall protection system (FPS) will be checked by visual and functional inspection in every use. Every 3 months the fall protection system checked by visual and functional inspection form will be filled. Control form, Mechanical Engineer, HSE Specialist and user will be signed.		
<b>1.Control</b>		<b>Date:</b>	
Controlled By	HSE Specialist	User	
<b>2.Control</b>		<b>Date:</b>	
Controlled By	HSE Specialist	User	
<b>3.Control</b>		<b>Date:</b>	
Controlled By	HSE Specialist	User	
<b>4.Control</b>		<b>Date:</b>	
Controlled By	HSE Specialist	Inspection by	



[illegible]





Check the condition of the gated rings (marks, cracks, wear, deformation, corrosion...)	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verify that the screw is properly tightened	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Make sure the rope has no cuts, burns, frayed strands, fuzzy areas, or signs of chemical	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5. Control results</b>								
<b>HARNESS safe for use</b>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Inspection Date:</b>								
<b>Next Inspection Date:</b>								
<p align="center"><b>If the Fully body harness use is prohibited, mark as faulty or damaged</b></p>								

**Annexure D**  
**List of Local Employees at Zorlu Wind Farm**  
**(O&M Phase)**

S.NO	NAME	DESIGNATION	Monthly Salary
1	Liaqat Ali	Store Incharge	25,400.00
2	Shah Nawaz	First Aid Clinc	21,600.00
3	Abdul Rehman	RO Plant Operator	18,600.00
4	Jamaluddin Brohi	Plumber/Welder	19,000.00
5	Baber Ali	Record Keeper	52,183.33
6	Ejaz Ali	Store Helper	18,600.00
7	Abdul Latif	Helper	18,700.00
8	Nooridin	Helper	19,000.00
9	Ghulam Mustafa	Helper	19,000.00
10	Muhammad Azeem	Helper	18,600.00
11	Muhammad Soomar	Gardener	19,000.00
12	Meboob Ali	Tea boy	19,000.00
13	Imran Ali	Workshop helper	
14	Ashoke kumar	Cleaner	18,700.00

## **Annexure E**

### **Bird Monitoring**

## Introduction

By: Zahid Baig Mirza

Bird monitoring assignment was taken up as part of EIA due to location of this wind energy farm. It is about 5km from Keenjhar Lake Wildlife Sanctuary where migratory waterfowl overwinter and many local birds also breed in the area. Additionally, project area comes within the range of occurrence of some bird species of concern, both locally as well as internationally. Even though many birds may not be the species of concern, yet these need to be '**monitored for their collusion**' with wind turbines and power lines. Other information needed was impact of disturbance on bird diversity, density and behavior during construction work and afterwards from the running activities of the WEF. More over since high towers of wind energy turbines are being erected in Pakistan and particularly in this area for the first time, there is no information regarding response of birds towards these structures. There is a significant number of bird species that have the ranges of occurrence that cover Jhimpir WEF. This includes; flocks of water birds and other Passerine birds that just fly pass over WEF site. It was not known how many of these birds have their daily rituals to fly from or to Keenjhar Lake. There was no information regarding height at which birds will fly pass over the WEF. Several migratory water bird species are known to have their nocturnal flights. There was no information whether these birds will be flying low or high over this WEF which is in proximity of Keenjhar Lake.

## Monitoring Methodology

This bird monitoring requires special methodology to give reliable scientific observations to properly interpret the impacts of the project on both the migratory bird species as well as the local bird species. The proper monitoring task requires internationally acceptable monitoring plan, which was carefully written.

As first step, the author of this document visited project area on 16<sup>th</sup> February, 2012 to observe transmission lines, transmission towers, fences of enclosures, new buildings of the offices with some newly planted trees and the high towers of wind turbines, some of which were already erected while erection work for more towers was in progress. Only three wind turbines were functioning. The monitoring area and the 'control area' were located on ground on the basis of a noise map provide by the company. A bird observer was recruited. He was given three day training to identify birds in the field with the help of a Field Guide to the birds of Pakistan.

Three sampling plots were marked on the map (map attached) as well as on the ground. Each plot of two km covered noise intensity range from the turbines into zero noise area (control area up to half a kilometer). The bird observations were made after sunrise in the morning and about one hour before sunset each day punctually and regularly. Birds were watched 25m on left and right sides, as well as in front and overhead while moving at a slow/medium pace in linear samples marked on ground. The observations were repeated every day throughout the year.

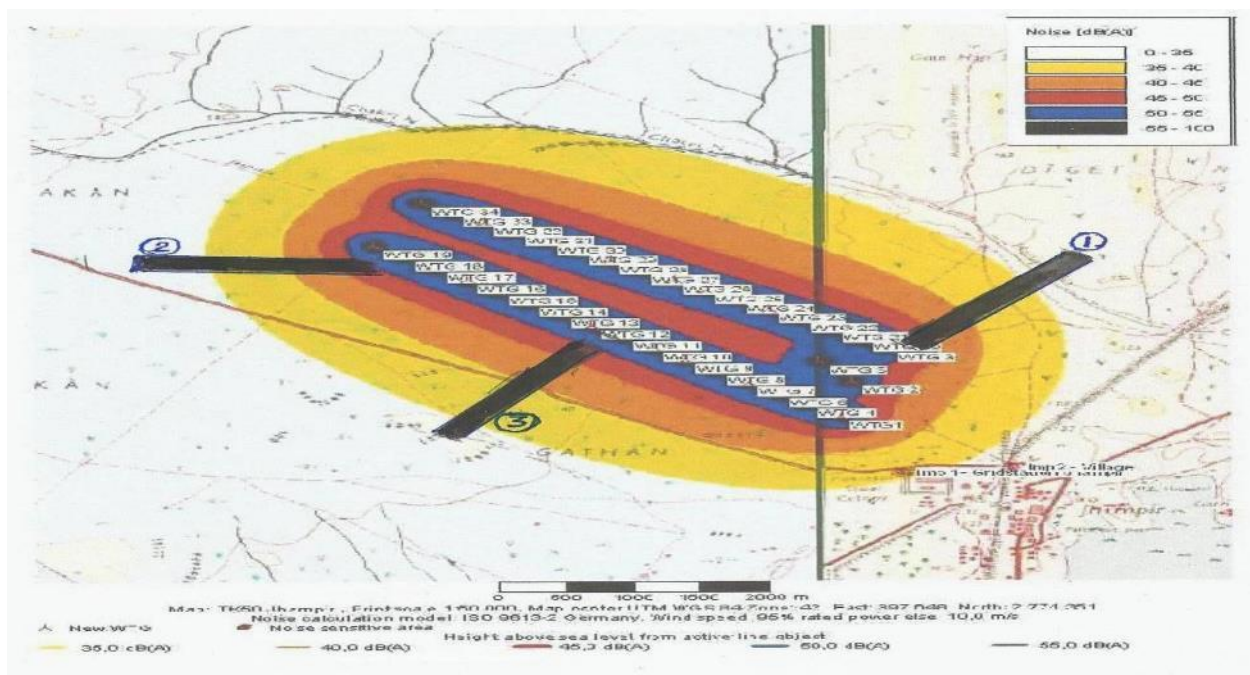


A good quality binocular, 'A Field Guide to Birds of Pakistan', a pen and a field notebook was given to the bird observer for use during the fieldwork. Migratory birds were also watched from a vantage place marked in the study area once a week. The general directions of the flocks were noted and their flight heights during the autumn, winter and spring seasons were estimated. There was a periodic search for dead birds early in the morning near the moving turbines. The following field proforma was daily filled to make the daily observation reports:

1. Date;
2. Sampling Strip #
  - a). Observations in noise zone:
  - b). Observations in control area:
3. Start time;
4. Weather: Clear sky, hazy, partly cloudy, cloudy, drizzle, rain.
5. Wind: Still, light, slow, medium, fast.
6. Air temperature:
7. End time
8. Additional observations/ remarks

This included the birds sighted within the noise area and the birds sighted in the control area. Each month's reports were then sent to author. The data was transferred on spreadsheets and recorded in the computer as well. The data was processed to calculate density, diversity and relative abundance of the bird species.

### Strip sample sites # 1, 2 and 3 marked on the noise intensity map



## **Bird Monitoring Findings during 2014**

- There was no incidence of bird collusion with static or moving blade of any wind turbine.
- The diversity and density of species of birds, on the average remained the same in the three linear sites within the noise disturbance zone and the three linear samples outside the noise disturbance zone. This means either the birds are adapted to the new environment with the turbines' normal working or the noise intensity of the turbines does not bother the birds.
- It was found that no flock of birds passed low over the Turbine Towers. During bird migration season flocks birds were sighted quite high (above 500 ft. or more) over project site. The regular observations have given the confidence that these towers are not causing any risk of collusion to birds or the bats.
- The study has provided a checklist for birds of the area. This checklist indicates that there is no threatened species of birds occurring in the area. There is no question of any risk of mortality to them by virtue of this project.
- So far no regular flyway of migratory birds was noted above the project site.
- There were no daily flight paths of local birds between their roosting places and feeding areas over the project site.
- Early morning searches for the bodies of collided birds give clear picture of the harmfulness of the project for birds. Based on these findings it is concluded that there are least bird mortality risks.
- Some flocks of birds feed in the project site but caused no risk of colliding with the moving turbine blades.
- There is no exciting/alarming information that may be highlighted in this brief.

# **ZORLU ENERGY FARM JHIMPIR BIRD COLLUSION RISK STUDY COCLUDING STATEMENT**

**December 31, 2015**

By Prof. Z. B. Mirza\*

\*Consultant ornithology and bird ethology Élan Valorisation Pvt. Limited

This concluding statement is based on 18 months vigilance of the migratory as well as sedentary species of birds, at the entire land where power generating 120 ft high turbine towers stand with their 30 ft long rotating blades. This Wind Energy Farm (WEF) is situated in one of those 'Wind Corridors' of Sindh where no mist prevails in any season. The number of rounds of the turbine blades was 16 per minute as counted during the day. Although Khinjer Lake is 5 km from this wind energy farm yet very few waterfowl flocks were seen, which were very high against the expectations. It is in the consultant's observations that the flocks of migratory birds, particularly the ducks approaching the lake, come flying high and before landing circle over the lake to select area for landing. These then descend for landing at the selected place. The migratory birds cross flying high over the wind turbine towers. It appears the area of the Wind Energy Farm is not significantly covered by a fly way of migratory birds as per observations during the study period. The migratory birds real corridor is further south, mostly along the coast. Khinjer Lake with extensive commercial fishing is now a disturbed area for birds. Moreover, introduction of grass carps has caused reduction in bottom flora and ultimately poor aquatic food chain. Less food availability at the bottom of the lake does not attract bottom grazing birds. Reduced concentration of phytoplankton, zooplankton and macroinvertebrates in the shallow waters of the edges of the lake has less attraction for dabbling ducks and waders. Fewer birds means lesser amounts of bird droppings, low nitrate and phosphates, less fertility of bottom, less floral growth and poor food chain. This lake has become less suitable for aquatic birds over the half century. It could be one of the causes of its being less attractive for migratory water birds. Thus the Zorlu WEF has least traffic of migratory bird over its air.

**Annexure F**  
**QHSE Policy for O&M Phase**

Approved By:



## QHSE Policy

We are committed to achieve consistent level of satisfaction to our stakeholders, contractor and customer through continual improvement in the quality of our services.

Based on Zorlu Energy's vision and values, we strive to produce energy through wind that enhancing national power supplies by focusing on our customers, employees, society and the environment in which we operate.

Zorlu O & M Top Management & its employees shall endeavor to ensure the satisfaction of our stakeholders by providing them with the best value in services, while recognizing that Quality, Health, Safety, Environment & Community Responsibilities are an integral part of our operation.

We shall achieve QHSE aims by:

- Ensuring that our customers are satisfied and to advice on appropriate use of green energy.
- Providing a frame work for establishing and reviewing QHSE objectives.
- Developing and implementing management Structure and procedures at all workplaces.
- Monitoring, Evaluating & continually improving QHSE performance through assessment, trainings and audit.
- Recognizing that QHSE is directly everyone responsibility.
- Making top Management, Sr. Engineers and Technicians responsible for QHSE Management System implementation & improvement.
- Promoting healthy and safe working environment through prevention of injuries and work-related illnesses

- Continuously minimize resource consumption and measure environmental impact
- Fully abiding by applicable legislative requirements related to QHSE.
- Communicating QHSE Policy to all stakeholders.
- Training and encouraging behavior that upholds the Policy.

**Annexure G**  
**Risk Assessment Sheet**

**RISK ASSESMENT**

Work permit number:

Date :

**DEFINITION OF RISK**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Working height    | <input type="checkbox"/> Crash          | <input type="checkbox"/> Springing particules |
| <input type="checkbox"/> Electric          | <input type="checkbox"/> Tripping       | <input type="checkbox"/> Noise                |
| <input type="checkbox"/> Falling objects   | <input type="checkbox"/> Confined space | <input type="checkbox"/> Poison               |
| <input type="checkbox"/> Lifting operation | <input type="checkbox"/> Heat stress    | <input type="checkbox"/> High Oil pressure    |
| <input type="checkbox"/> Excavation works  | <input type="checkbox"/> Rotary machine |   |
| <input type="checkbox"/> Other             | <input type="checkbox"/> Fire           |   |

**Precaution****Proper PPE**

- |                                  |                                   |   |
|----------------------------------|-----------------------------------|---|
| <input type="checkbox"/> Helmet  | <input type="checkbox"/> Slider   | <input type="checkbox"/> Safety glasses |
| <input type="checkbox"/> Harness | <input type="checkbox"/> Glove    | <input type="checkbox"/> Shock absorber |
| <input type="checkbox"/> Mask    | <input type="checkbox"/> Ear plug | <input type="checkbox"/> Safety boot    |
| <input type="checkbox"/> Others  |                                   |   |

Prepared by

Approved by



## **Annexure H**

### **Site Photographs**

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Fig I-1: Before Inspection Meeting



Fig I-2: Inspection of Communication Room



Fig I-3: Inspection of SCADA Room



Fig I-4: Inspection of Control Room



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Fig I-5: Inspection of Battery Room



Fig I-6: Inspection of Fire Fighting System



Fig I-7: Inspection of Site Ambulance



Fig I-8: Inspection of Site Dispensary



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Fig I-9: Inspection of Reverse Osmosis Plant



Fig I-10: Vegetation at Campsite



Fig I-11: After Briefing Meeting



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Fig I-12: Internal view of Camps



Fig I-2: External View of Camps



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**Annexure I**  
**Stakeholder/Community Consultation at 7<sup>th</sup> Year of  
the Project Operation**

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Fig J-1: Consultation at Aatho Goth



Fig J-2: Consultation at Aatho Goth



Fig J-3: Consultation at Ladho Ganjo



Fig J-4: Inspection of Ladho Ganjo



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Fig J-5: Consultation at Urs Muhammad Jakhro



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**ZORLU Enerji  
50 MW WIND FARM  
AT THE JIMPIR AREA OF SINDH**

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**QUESTIONNAIRE  
FOR  
Focused Group Discussion  
Stakeholder/community consultation at 7<sup>th</sup> year of the project**

Q.1. Are you satisfied with the operation of Wind Farm Project in your area?

a) Yes                      b) No

Q.2. If yes, what impacts do you think, project may have in your area?

(Education, health, house, agriculture, livestock, trees, water, fish religious and other facility buildings, employment opportunities, impact on rural to urban migration, sanitation, drinking water, transport, fuel and other energy sources such as electricity and gas connection)

- Positive impacts

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---

- Negative impacts

---

---

---

Q.3. In case of any negative impact(s), what you suggest to minimize the impact?

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---

Q.4. What type of benefits are availed through CSR?

---

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---

Q.5. Comments/suggestions to improve CSR activity?

---

---

---

\*



## SURVEY FOR INSTALLATION OF STAND ALONE SOLAR BASED

Family Status											Demand Load calculation				Estimated Total Load & Cost	
Village Name: LADHO GANJO		Family Members				Covered area			Yard		Fan Required	Load (Watt)	Bulb Required	Load (Watt)	Estimated Total Load (Watt)	Estimated cost (PKR)
S.N	Name Family Head	Male	Female	Children	Total Members	Rooms	Kitchen	Veranda	Front	Back						
1	Muhammad khan	5	3	7	15	3	1	1	YES	X	3	150	3	25	175	21950
2	Ghulam Mustafa	1	4	0	5	2	1	1	YES	X	2	100	3	20	120	18450
3	Ali Akbar	2	2	4	8	1	1	1	YES	X	2	100	3	20	120	18450
4	Imam Bux	2	2	0	4	1	1	1	YES	X	2	100	3	20	120	18450
5	Gulsher	4	2	0	6	2	1	1	YES	X	2	100	3	20	120	18450
6	Gul Muhammad	2	3	3	8	1	1	1	YES	X	1	50	3	15	65	14950
7	Mangi Ladho	1	1	2	4	1	1	1	YES	X	1	50	3	15	65	14950
8	Noor Ahmed	4	2	0	6	1	1	1	YES	X	1	50	3	15	65	14950
9	Shafi muhammad	3	6	9	18	2	1	1	YES	X	2	100	3	20	120	18450
10	Allah Juryo	1	1	3	5	1	1	1	YES	X	1	50	3	15	65	14950
TOTAL		25	26	28	79	15	10	10	0	0	17	850	30	185	1035	174000

\*

\*

## **ANNEXURE J**

### **Complex Energy Yield and Power Curve-2018**

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Net Production (MWh) 2017-18		
Month	Achieved monthly production MWh	Wind speed m/s
January 2018	4,800	5.01
February 2018	4,756	5.12
March 2018	7,110	6.05
April 2018	11,768	7.11
May 2018	15,417	8.17
June 2018	23,481	10.21
July 2018	23,833	10.05
August 2018	23,589	10.0
September 2018	17,065	8.5
October 2018	3,856	4.74
November 2018	4,333	4.79
December	5,569	5.18
<b>Average Wind Speed &amp; Total Production</b>	<b>145,582</b>	<b>7.08</b>

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## **ANNEXURE K**

### **Firefighting Drill Record**

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ZORLUENERJI

Training RecordCOURSE TITLE: Fisa drillDURATION: 3 hr.CONDUCTED ON: 03-07-2019TUTOR NAME: Shahid AliDEPARTMENT (S): ZORLU O&M Pakistan

S. No.	Name of Participant	Initial
01	Zubair Ahmed	ZA
02	Shahid Ali	SA
03	Imtiaz Ali	IA
04	ALI MUHAMMAD DANISH	DA
05	Zeeshan Ali	ZA
06	Nadeem Hussain Samra	NS
07	S. Atif Riaz	AR
08	Imran Ali	IA
09	Azeem	AE
10	Soom AR	SA
11	Maqbat Ali	MA
12	Mehboob Ali	MA
13	Ashraf Kumar	AK
14	Zafar Ali	ZA
15	Uzair	UA
16	Gulshad	GA
17	Asghar Ali	AA
18	Masroor Ahmed	MA

Remarks:

\*

## **ANNEXURE L**

### **Noise Monitoring Report**

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ZORLUENERJI

NOISE MONITORING FORM

ZORUM-WPP-MS-F-42

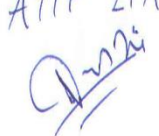

Issue Date: 01/05/2015

Revision: 01

Project name:	WF ZORLU, Pakistan	Average wind speed (m/s)	14.5
Location:	Pakistan, Jhampir WF ZORLU	Plant Production: (MW)	48.50
Date:	05-07-2019	Wind Direction:	East West North South
Theme:	Noise Readings for operational turbines	EW WN NS SE	

WS

Measuring instrument	
Manufacturer:	TECMAN (TM810 M)
Type:	Digital Sound level Meter (TM810 M)

Coordinates	Date	Time	WTG_ID	Distance from Location	Value [dB]	Observations	Name & Signature:
25° 2'16.07" N 68° 03' 29" E	05/07/2019	10:46	WTG#01	5 METER	77.8		ATIF ZIA 
25° 2'30.09" N 67° 59' 34.82" E	"	10:49	WTG#06	5 METER	82.1		
25° 2'59.30" N 67° 59' 4.70" E	"	10:53	WTG#10	5 METER	79.6		
25° 3'46.58" N 67° 57' 59.89" E	"	10:20	WTG#16	5 METER	76.3		A.M. DANISH 
25° 2'50.19" N 67° 59' 46.27" E	"	10:40	WTG#17	5 METER	76.6		
25° 2'24.91" N 67° 58' 54.67" E	"	10:57	WTG#22	5 METER	76.7		
25° 3' 5.85" N 67° 59' 54.11" E	"	10:35	WTG#24	5 METER	73.7		
25° 3' 33.08" N 67° 59' 9.63" E	"	10:31	WTG#28	5 METER	75.8		
25° 4' 8.44" N 67° 58' 11.87" E	"	10:26	WTG#33	5 METER	75.9		
25° 3' 17.96" N 67° 59' 4.83" E	"	11:04	Control Building	Reference From (WTG#21)	68.3		
25° 2'45.49" N 67° 59' 57.70" E	"	10:43	Camp Area	Reference From (WTG#05)	75.0		

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## **ANNEXURE M**

### **Training Record Sheet**

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## Training Record Sheet – 2019

S.NO	TRAINING DESCRIPTION	CATEGORY	LOCATION	COMPANY/TRAINERE	ESTIMATED TIME (Hr)	ESTIMATED DATE	REMARKS
1	SKF maintenance tools demo	TECHNICAL	ZORLU WIND FARM JHIMPIR	ZOROM	2	22-March-19	Done
2	In house fire drill	HSE	ZORLU WIND FARM JHIMPIR	ZOROM	3	7-July-19	Done
3	In house fire drill	HSE	ZORLU WIND FARM JHIMPIR	ZOROM	3	2-Dec-19	
4	Trouble Shooting	TECHNICAL	ZORLU WIND FARM JHIMPIR	ZOROM	1	23-Dec-19	Done

\*

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## **Annexure N**

### **Water Test Reports**

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## **ANALYTICAL REPORT**

### **BORE WATER ANALYSIS**

MULTIPLE PARAMETER ANALYSIS / EHS – 422 / 2018

PREPARED FOR:

**ZORLU ENERJİ PAKISTAN LIMITED**

\*

\*



## ANALYTICAL REPORT

Report No.

### CLIENT DETAILS

### LABORATORY DETAILS

Client	Zorlu Enerji Pakistan Limited	Manager	Iqbal Ashraf
Sampling Location	Jhimpir, Sindh	Laboratory	Chemical & Environmental Laboratory
Contact	Mr. Syed Zain	Address	H-3/3, Sector- 5, Korangi Industrial Area Karachi- 74900.
Tel	021 – 35875366	Telephone	+92-21-35121388-97
Fax	-	Fax	+92-21-35121329
Email	<a href="mailto:Zain.shah@zorlu.com">Zain.shah@zorlu.com</a>	Email	<a href="mailto:Iqbal_ashraf@sgs.com">Iqbal_ashraf@sgs.com</a> , <a href="mailto:Karachi.environment@sgs.com">Karachi.environment@sgs.com</a>
Project	Sampling & Analysis	SGS Reference	EHS-Lab-8457/ 2018
Order Number	EHS-422/2018	Sample Collected	14-October-2018
Sample	Water Sample	Report Number	-
		Date Reported	05- November -2018

### COMMENTS

This report is not valid for any negotiation.  
The remaining portion of the sample (s) will be disposed off after one week unless otherwise instructed. (Conditions Apply)

### SIGNATORIES

Syed Zeeshan Ali  
Assistant Manager Laboratory

Iqbal Ashraf  
Deputy Manager Laboratory

SGS Pakistan (Private) Limited

H-3/3, Sector-5, Korangi Industrial Area Karachi -74900, UAN: 111-222-747  
t +92 -21-35121388-97, f +92-21-35121329, [www.sgs.com](http://www.sgs.com)

Member of SGS Group (Société Générale de Surveillance)

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\*



## ANALYTICAL REPORT

Report No.

Sample No.	EHS-LAB-8457/2018		
Client ID	01		
Sample Matrix	Camp Bore water		
Sample Date	14/10/2018		
Sample Receipt Date	15/10/2018		
Sampled By	SGS Personnel		
Parameter	Units	LOR	Result
<b>Color APHA-2120 B/C 22<sup>nd</sup> Edition</b>			
Color	Pt-Co	05.00	19.50
<b>pH APHA 4500H+ B 22<sup>nd</sup> Edition</b>			
pH at 25 °C	pH unit	00.10	06.62
<b>Odor In House (Organoleptic)</b>			
Odor	-	-	Odorless
<b>Taste Physical</b>			
Taste	-	-	Salty
<b>Turbidity APHA 2130 B 22<sup>nd</sup> Edition</b>			
Turbidity	NTU	00.20	<0.20
<b>Chloride APHA-4500Cl- B 22<sup>nd</sup> Edition</b>			
*Chloride	mg/L	05.00	2167.49
<b>Total Dissolved Solid APHA 2540 C 22<sup>nd</sup> Edition</b>			
*Solids, Total dissolved (TDS)	mg/L	05.00	5520.00
<b>Total Hardness APHA 2340 B 22<sup>nd</sup> Edition</b>			
*Hardness, Total as CaCO <sub>3</sub>	mg/L	00.05	1545.96
<b>Total Solid APHA 2540 D 22<sup>nd</sup> Edition</b>			
*Solids, Total (TS)	mg/L	05.00	5538.00
<b>Chemical Oxygen Demand (COD) APHA-5220 B 22<sup>nd</sup> Edition</b>			
*COD	mg/L	05.00	41.50
<b>Biochemical Oxygen Demand (BOD<sub>5</sub>) APHA-5210 D 22<sup>nd</sup> Edition</b>			
*BOD <sub>5</sub>	mg/L	02.00	12.00
<b>Total Suspended Solid APHA 2540 D 22<sup>nd</sup> Edition</b>			
*Solids, Total suspended (TSS)	mg/L	05.00	<05.00
<b>Sulfate APHA 4500 SO<sub>4</sub>-2 C 22<sup>nd</sup> Edition</b>			
*Sulfate (SO <sub>4</sub> -2)	mg/L	05.00	496.89
<b>Sulfide APHA 4500 S<sup>2-</sup> F 22<sup>nd</sup> Edition</b>			
Sulfide (S)	mg/L	01.00	<01.00
<b>Total Coliforms Membrane Filtration Technique APHA 9222B 22<sup>nd</sup> Edition</b>			
*Total Coliforms	CFU/100ml	-	Absent
<b>Faecal coliform (E.coli) Membrane Filtration Technique APHA 9222D 22<sup>nd</sup> Edition</b>			
* Faecal coliform (E.coli)	CFU/100ml	-	Absent

End of Report

\*

\*



## ANALYTICAL REPORT

Report No.

### FOOTNOTE

IS	Insufficient sample for analysis.
LOR	Limits of Reporting
TCC	Total Colony Count
P/A	Present / Absent
MPN	Most Probable Number
TPC	Total Plate Count
HPC	Heterotrophic Plate count
APC	Aerobic Plate Count
TVA	Total Viable Count & Total Bacteria
FDA	Food & Drug Administration of USA
BAM	Bacteriological Analytical Manual
LNR	Sample Listed, but not received
*	This analysis is covered by the scope of accreditation. Uncertainty of the test can be provided upon request.
^	Performed by the outside laboratory
<	Values less than reporting limit
SEQS	Sindh Environmental Quality Standard

Sample analyzed as received.

This document is issued, on the client's behalf, by the company under its general conditions of service available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). The client's attention is drawn to the limitation of indemnification and jurisdiction issues defined therein.

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## **Annexure O**

### **Training Certificates**

\*



\*



This is a certificate awarded to

**Shahid Ali**

on successfully completing

**Managing Safely**

a course approved and validated by the

**Institution of Occupational Safety and Health**

in association with

**Wanco Services**

Signed on behalf of IOSH

A handwritten signature in blue ink, reading 'Ben Messenger'.

Chief Executive

A handwritten signature in blue ink, reading 'JAM'.

Course Organiser



Date: 18 December 2016

Cert No.: 514216

Possession of this certificate does not confer exemption from accredited qualifications which lead to membership of IOSH.

\*

\*

## **Annexure P**

### **ISO/OHSAS Certificates of the Company**

\*

\*

# CERTIFICATE



**for the management system according  
to ISO 9001:2015 and ISO 14001:2015  
and BS OHSAS 18001:2007**

The proof of the conforming application with the regulation was  
furnished and in accordance with certification procedure it is certified for  
the company

**ZORLU ENERJİ ELEKTRİK ÜRETİM A.Ş.**  
**Levent 199, Büyükdere Cad. No: 199 34394**  
**Şişli- İstanbul / Turkey**

Scope:

**Production and sales of electricity and steam**

Certificate Registration No.:	TIC 15 100 179852 TIC 15 104 171490 TIC 15 116 17780	Valid until: 2020-05-01 Valid from: 2017-05-02
Audit Report No.:	3330 2UY3 A0	

This certification was conducted in accordance with the TIC auditing and certification procedures and  
is subject to regular surveillance audits.

  
TÜV Thüringen e.V.  
Certification body for  
systems and personnel



Jena, 2017-05-02



Original certificates  
are branded with a hologram.

The current validity can be demanded at our homepage [www.tuev-thueringen.de](http://www.tuev-thueringen.de)

Zertifizierungsstelle des TÜV Thüringen e.V. • Ernst-Ruska-Ring 6 • D-07745 Jena • ☎ +49 3641 399740 • ✉ [zertifizierung@tuev-thueringen.de](mailto:zertifizierung@tuev-thueringen.de)

\*

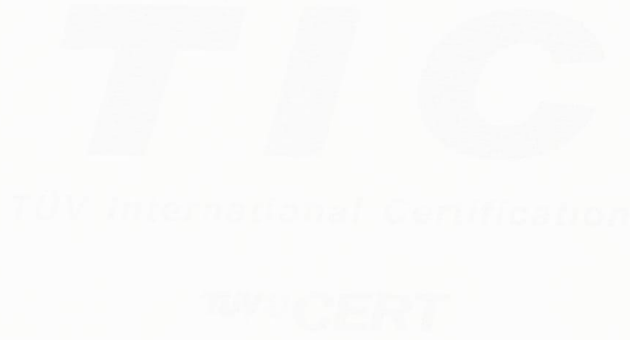
\*



**ZORLU O&M ENERJİ TESİSLERİ İŞLETME VE BAKIM HİZMLERİ A.Ş.**  
Lüleburgaz Tesisi: Yeni Mahalle D100 Karayolu 17/F Lüleburgaz / Kırklareli / Türkiye

**Kapsam:** Elektrik Üretim Santralleri İşletme ve Bakım Hizmetleri

Sertifika-No. TIC 15 100 179868/2 // TIC 15 104 171495/2 // TIC 15 116 17785/2



*Michael*

TÜV Thüringen e.V.  
Sistem ve Personel  
Belgelendirme Kurumu



Jena, 2017-04-25



Orijinal sertifikalar  
hologram ile sağlanır.

Bu ek sadece Sertifika No: 15 100 179868/15 104 171495/15 116 17785/04/17 ile birlikte geçerlidir

\*

\*

**TIC 15 100 179868// TIC 15 104 171495  
TIC 15 116 17785 No. lu Sertifikaya ek**



**ZORLU O&M ENERJİ TESİSLERİ  
İŞLETME VE BAKIM HİZMLERİ A.Ş.**

**Levent 199, Büyükdere Cad. No:199  
34394 ,Şişli- İSTANBUL / TURKEY**

Aşağıda belirtilen Şubeler Sertifika kapsamına dahildir:

**Merkez**

**ZORLU O&M ENERJİ TESİSLERİ İŞLETME VE BAKIM HİZMLERİ A.Ş.**  
Levent 199, Büyükdere Cad. No:199 34394  
Şişli- İstanbul / Türkiye

**Kapsam:** Elektrik Üretim Santralleri İşletme ve Bakım Hizmetleri

Sertifika-No. TIC 15 100 179868 // TIC 15 104 171495 // TIC 15 116 17785

**Şubeler**

**ZORLU O&M ENERJİ TESİSLERİ İŞLETME VE BAKIM HİZMLERİ A.Ş.**  
Osmaniye Tesisi: Sardem-Demirciler D400 Karayolu Üzeri Sardem Demirciler Mevkii  
3.km Yönetim Binası Bahçe-Osmaniye / Türkiye

**Kapsam:** Elektrik Üretim Santralleri İşletme ve Bakım Hizmetleri

Sertifika-No. TIC 15 100 179868/1 // TIC 15 104 171495/1 // TIC 15 116 17785/1

Bu ek sadece Sertifika No: TIC 15 100 179868//15 104 171495//15 116 17785/04/17 ile birlikte geçerlidir

\*

\*



**ZORLU O&M ENERJİ TESİSLERİ İŞLETME VE BAKIM HİZMLERİ A.Ş.**  
Lüleburgaz Site: Yeni Mahalle D100 Karayolu 17/F Lüleburgaz / Kırklareli– Turkey

**Scope:** Operation and maintenance services of electricity generation power plants

Certificate-No TIC 15 100 179868/2 // TIC 15 104 171495/2 // TIC 15 116 17785/2



*Michael*

TÜV Thüringen e.V.  
Certification body for  
systems and personnel



Jena, 2017-04-25



Original certificates  
are branded with a hologram.

This annex is valid only in connection with the certificate No TIC15 100 179868/15 104 171495/15 116 17785/04/17 Seite 2

\*

\*

Enclosure to  
Certificate-No TIC 15 100 179868  
TIC 15 104 171495  
TIC 15 116 17785



**ZORLU O&M ENERJİ TESİSLERİ  
İŞLETME VE BAKIM HİZMLERİ A.Ş.**

**Levent 199, Büyükdere Cad. No:199  
34394 ,Şişli- İSTANBUL / TURKEY**

Following local branches are part of the certificate:

**Central office**

**ZORLU O&M ENERJİ TESİSLERİ İŞLETME VE BAKIM HİZMLERİ A.Ş.**  
Levent 199, Büyükdere Cad. No:199 34394  
Şişli- İstanbul / Turkey

**Scope:** Operation and maintenance services of electricity generation power plants

Certificate-No TIC 15 100 179868 // TIC 15 104 171495 // TIC 15 116 17785

**Locations**

**ZORLU O&M ENERJİ TESİSLERİ İŞLETME VE BAKIM HİZMLERİ A.Ş.**  
Osmaniye Site: Sardem-Demirciler D400 Karayolu Üzeri Sardem Demirciler Mevkii  
3.Km Yönetim Binası Bahçe-Osmaniye / Turkey

**Scope:** Operation and maintenance services of electricity generation power plants

Certificate-No TIC 15 100 179868/1 // TIC 15 104 171495/1 // TIC 15 116 17785/1

\*



# SERTİFİKA



## ISO 9001:2015, ISO 14001:2015 ve BS OHSAS 18001:2007'e göre yönetim sistemi

Belgelendirme prosedürleri doğrultusunda ve düzenlemeler ile uyumlu uygulamaların kanıtlanması ile

## ZORLU O&M ENERJİ TESİSLERİ İŞLETME VE BAKIM HİZMLERİ A.Ş.

Lüleburgaz Tesisi: Yeni Mahalle D100 Karayolu 17/F  
Lüleburgaz / Kırklareli / Türkiye

Ünvanlı kuruluşun, belirtilen standarda göre, aşağıdaki geçerlilik alanında bir yönetim sistemi uyguladığı belgelenmektedir.  
Geçerlilik alanı

### Elektrik Üretim Santralleri İşletme ve Bakım Hizmetleri

Sertifika Tescil No: TIC 15 100 179868/2  
TIC 15 104 171495/2  
TIC 15 116 17785/2  
2020-04-24 tarihine kadar geçerli  
2017-04-25 tarihinden itibaren  
Tetkik Raporu No: 3330 2UY8 A0

İşbu sertifikasyon TIC tetkik ve belgelendirme prosedürlerine göre gerçekleştirilmiştir ve düzenli aralıklarla yapılan gözetim tetkiklerine tabidir. Bu sertifika, ana sertifika ile birlikte geçerlidir.

  
TÜV Thüringen e.V.  
Sistem ve Personel  
Beygelendirme Kurumu



Jena, 2017-04-25



Orjinal sertifikalar  
hologram ile sağlanır.

Güncel geçerliliği 'www.tuev-thueringen.de' adresinden sorgulanabilir.

Zertifizierungsstelle des TÜV Thüringen e.V. • Ernst-Ruska-Ring 6 • D-07745 Jena • ☎ +49 3641 399740 • ✉ zertifizierung@tuev-thueringen.de



# SERTİFİKA



## ISO 9001:2015, ISO 14001:2015 ve BS OHSAS 18001:2007'e göre yönetim sistemi

Belgelendirme prosedürleri doğrultusunda ve düzenlemeler ile uyumlu uygulamaların kanıtlanması ile

## ZORLU O&M ENERJİ TESİSLERİ İŞLETME VE BAKIM HİZMLERİ A.Ş.

Osmaniye Tesisi : Sardem-Demirciler D400 Karayolu Üzeri  
Sardem Demirciler Mevkii 3.km Yönetim Binası  
Bahçe-Osmaniye / Türkiye

Ünvanlı kuruluşun, belirtilen standarda göre, aşağıdaki geçerlilik alanında bir yönetim sistemi uyguladığı belgelenmektedir.  
Geçerlilik alanı

### Elektrik Üretim Santralleri İşletme ve Bakım Hizmetleri

TIC 15 100 179868/1  
Sertifika Tescil No: TIC 15 104 171495/1 2020-04-24 tarihine kadar geçerli  
TIC 15 116 17785/1 2017-04-25 tarihinden itibaren

Tetkik Raporu No: 3330 2UY8 A0

İşbu sertifikasyon TIC tetkik ve belgelendirme prosedürlerine göre gerçekleştirilmiştir ve düzenli aralıklarla yapılan gözetim tetkiklerine tabidir. Bu sertifika, ana sertifika ile birlikte geçerlidir.



TÜV Thüringen e.V.  
Sistem ve Personel  
Beygelendirme Kurumu



Jena, 2017-04-25



Orijinal sertifikalar  
hologram ile sağlanır.

Güncel geçerliliği [www.tuev-thueringen.de](http://www.tuev-thueringen.de) adresinden sorgulanabilir.

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# CERTIFICATE



for the management system according  
to ISO 9001:2015 and ISO 14001:2015  
and BS OHSAS 18001:2007

The proof of the conforming application with the regulation was  
furnished and in accordance with certification procedure it is certified for  
the company

**ZORLU O&M ENERJİ TESİSLERİ İŞLETME VE  
BAKIM HİZMLERİ A.Ş.**

**Lüleburgaz Site: Yeni Mahalle D100 Karayolu 17/F  
Lüleburgaz / Kırklareli / Turkey**

Scope


**Operation and maintenance services of  
electricity generation power plants**

Certificate Registration No.: TIC 15 100 179868/2  
TIC 15 104 171495/2  
TIC 15 116 17785/2

Valid until: 2020-04-24  
Valid from: 2017-04-25

Audit Report No.: 3330 2UY8 A0

This certification was conducted in accordance with the TIC auditing and certification procedures and  
is subject to regular surveillance audits. The certificate is valid in conjunction with the main certificate.

  
TÜV Thüringen e.V.  
Certification body for  
systems and personnel



Jena, 2017-04-25



Original certificates  
are branded with a hologram.

The current validity can be demanded at our homepage [www.tuev-thueringen.de](http://www.tuev-thueringen.de).

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# CERTIFICATE



for the management system according  
to ISO 9001:2015 and ISO 14001:2015  
and BS OHSAS 18001:2007

The proof of the conforming application with the regulation was  
furnished and in accordance with certification procedure it is certified for  
the company

## ZORLU O&M ENERJİ TESİSLERİ İŞLETME VE BAKIM HİZMLERİ A.Ş.

Osmaniye Site: Sardem-Demirciler D400 Karayolu Üzeri  
Sardem Demirciler Mevkii 3.km Yönetim Binası  
Bahçe-Osmaniye / Turkey

### Scope


Operation and maintenance services of  
electricity generation power plants

Certificate Registration No.: TIC 15 100 179868/1  
TIC 15 104 171495/1  
TIC 15 116 17785/1

Valid until: 2020-04-24  
Valid from: 2017-04-25

Audit Report No.: 3330 2UY8 A0

This certification was conducted in accordance with the TIC auditing and certification procedures and  
is subject to regular surveillance audits. The certificate is valid in conjunction with the main certificate.

  
TÜV Thüringen e.V.  
Certification body for  
systems and personnel



Jena, 2017-04-25



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