National Electric Power Regulatory Authority
Islamic Republic of Pakistan

Registrar

NEPRA Tower, Attaturk Avenue (East), G-5/1, Islamabad
Ph: +92-51-9206500, Fax: +92-51-2600026
Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

No. NEPRA/R/DL/LAG-347/1735-41 February 01, 2017

Mr. Tanveer Ahmed
Technical Director
Zulaikha Energy (Private) Limited
K/51-A, S.I.T.E. Karachi.

Subject: **Grant of Generation Licence No. WPGL/39/2017**
Licence Application No. LAG-347
Zulaikha Energy (Private) Limited (ZEPL)

Reference: Your application vide letter No. Nil, dated Nil (received on May 24, 2016).

Enclosed please find herewith Generation Licence No. WPGL/39/2017 granted by National Electric Power Regulatory Authority (NEPRA) to Zulaikha Energy (Private) Limited (ZEPL) for its 50.00 MW Wind Power Plant located at Deh Kohistan 7/3 & 7/4, Tapo Jungshahi, District Thatta in the province of Sindh, pursuant to Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997). Further, the determination of the Authority in the subject matter is also attached.

2. Please quote above mentioned Generation Licence No. for future correspondence.

Enclosure: Generation Licence (WPGL/39/2017)

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01.02.17
(Syed Safeer Hussain)

Copy to:

1. Secretary, Ministry of Water and Power, A-Block, Pak Secretariat, Islamabad.
2. Chief Executive Officer, Alternative Energy Development Board (AEDB), 2nd Floor, OPF Building, G-5/2, Islamabad
3. Chief Executive Officer, NTDC, 414-WAPDA House, Lahore
4. Chief Executive Officer, CPPA-G, 6th Floor, Shaheed-r-Millat Secretariat, Jinnah Avenue, Blue Area, Islamabad
5. Chief Executive Officer, Hyderabad Electric Supply Company Limited (HESCO), WAPDA Offices Complex, Hussainabad, Hyderabad
6. Director General, Environment Protection Department, Government of Sindh, Complex Plot No. ST-2/1, Korangi Industrial Area, Karachi.

National Electric Power Regulatory Authority (NEPRA)

Determination of the Authority in the Matter of Application of Zulaikha Energy (Private) Limited for the Grant of Generation Licence

Case No. LAG-347
January 26, 2017

(A). Background

(i). Government of Pakistan (GoP) has set up Alternative Energy Development Board (AEDB) for harnessing renewable energy resources in the country. AEDB has issued Letter of Intent (LoI) to various renewable energy developers for setting up projects in the country, under the Policy for Development of Renewable Energy for Power Generation 2006 (the RE Policy).

(ii). The provinces are also empowered to set up generation facilities of any size, location and fuel of their choice. In view thereof, Govt. of Sindh issued an LoI dated August 28, 2015 to Zulaikha Energy (Private) Limited (ZEPL) for establishing 50 MW wind based generation facility/wind power plant in the Jhimpir wind corridor, District Thatta, in the Province of Sindh. According to the terms and conditions of the LoI, ZEPL carried out a feasibility study of the project.

(B). Filing of the Application

(i). In accordance with Section-15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the NEPRA Act), ZEPL submitted an application on May 24, 2016 requesting for the grant of generation licence.

(ii). The Registrar examined the submitted application to confirm its compliance with the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 (the Licensing Regulations). The Registrar found the application compliant with the Licensing Regulations and submitted the matter for consideration of the Authority seeking admission of the application or otherwise.

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(iii). The Authority considered the matter in its Regulatory Meeting (RM-16-431), held on July 12, 2016 and found the form and content of the application in substantial compliance with Regulation-3 of the Licensing Regulations. The Authority admitted the application for consideration of the grant of the generation licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority approved the advertisement containing (a). the prospectus; (b). a notice to the general public regarding admission of the application of ZEPL, for the purpose of inviting the general public to submit their comments in the matter as stipulated in Regulation-8 of the Licensing Regulations. Further, the Authority also approved the list of the relevant stakeholders to inform regarding the admission of the application of ZEPL and seek their comments to assist the Authority in the matter. Accordingly, the advertisement was published in the national newspapers on July 14, 2016.

(iv). Apart from the above, separate letters were also sent to government ministries, their attached departments and representative organizations etc. on July 15, 2016. The said stakeholders were requested to submit their views/comments for assistance of the Authority.

(C). Comments of Stakeholders

(i). In reply to the above, the Authority received comments from five (05) stakeholders. These included Board of Investment, Pakistan Council of Renewable Energy Technologies, Anwar Kamal Law Associates, Karachi Shipyard & Engineering Works Limited and Engineering Development Board. The salient points of the comments offered by the above mentioned stakeholders are summarized in the following paragraphs: -

(a). Board of Investment in its comments submitted that energy sector is the priority sector of the Government to cater the short fall in the country. Board of Investment being an investment promoting and facilitating agency has also been making its efforts to attract investment in energy sector and understands that affordable and smooth supply of energy is the backbone for industrial growth as well as attracting foreign direct investment in the country. In view thereof, Board of Investment supports the grant of generation licence, subject to consumer friendly and competitive tariff and completion of all

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codal/technical formalities under rules & regulations;

(b). Pakistan Council of Renewable Energy Technologies commented that contents of the application have been examined and it has no objection on the grant of Generation Licence. The Council further submitted that it cannot comment on the financial or other TOR's of the project;

(c). Anwar Kamal Law Associates in their comments raised different issues of power sector in general including surplus capacity, under utilization of power plants and induction of new power plants on "take or pay basis" etc. Further, Anwar Kamal Law Associates submitted their reservations regarding different power sector issues including financial and economic viability of the induction of renewable energy projects, higher upfront tariff of renewable energy projects, "must run condition" of renewable energy projects, suitability of upfront tariff regime for Pakistan, induction of renewable energy projects in the current scenario (i.e. reduction in oil prices, RLNG contract with Qatar, upcoming coal power projects and introduction of competitive market etc.), affordability vs. availability of electric power and long term power purchase agreements on "take or pay" basis etc. In view of the said, Anwar Kamal Law Associates requested to reject the generation licence application of ZEPL;

(d). Karachi Shipyard & Engineering Works Limited in its comments stated that it has no objection on the application for grant of generation licence in respect of 50.0 MW wind power project at Jhimpir, District Thatta. Karachi Shipyard & Engineering Works Limited further submitted that it is fully capable of manufacturing the towers for wind turbines and its fabrication facilities are available in the vicinity of Karachi much near to Jhimpir. The rates of fabrication and site installation are most competitive and at par with the market. Karachi Shipyard & Engineering Works Limited requested the Authority to advise ZEPL to consider their facilities for local fabrication, erection and installation of required wind power plant;

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(e). Engineering Development Board submitted that as per C.G.O-03/2015 power plants of capacity of 25 MW and above are exempted from payment of duties and taxes as defined under the relevant notifications, and no condition for the local manufacturing is applicable on the import of these power plants. While evaluating the list, it was observed that the list of importable items also contains items which otherwise could not be imported as part of plant, machinery and equipment etc., as the same do not fall in the criteria defined under CGO-3/2015. Therefore, while recommending the list of equipment, it may be ensured that irrelevant equipments are not permitted which are not directly used as power plant equipment.

(ii). The above comments of the stakeholders were examined and comments of Pakistan Council of Renewable Energy Technologies and Board of Investment were found in favour of the grant of Generation Licence to ZEPL, whereas Anwar Kamal Law Associates, Karachi Shipyard & Engineering Works Limited and Engineering Development Board have raised certain observations. Accordingly, it was considered appropriate to seek the perspective of ZEPL on the comments/observations of Anwar Kamal Law Associates, Karachi Shipyard & Engineering Works Limited and Engineering Development Board.

(iii). In response to the comments/observations of Anwar Kamal Law Associates, ZEPL submitted its reply stating that the comments of Anwar Kamal Law Associates are generic in nature regarding the overall power sector of Pakistan and issues relating to the viability of induction of renewable energy power plants. None of the comments highlighted by Anwar Kamal Law Associates are specific in nature which relates to the project of ZEPL and/or need to be specifically addressed by the ZEPL. Since the matters relating to Pakistan power sector and generation of electric power fall within the activities of NEPRA being the sole and exclusive regulator, it is the Authority which is best place to evaluate such issues and the applicant will elect not to comment on this matter at this stage, allowing NEPRA and other policy making institutions to respond to the issues relating to overall impact of the specific technology in the power sector of Pakistan.

(iv). Regarding the observations of Karachi Shipyard & Engineering Works Limited, ZEPL submitted that to achieve higher capacity factor and

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efficiency, ZEPL has already finalized commercial terms with Gamesa-a global leader in the design, manufacture, installation and maintenance of wind turbines.

(v). In reply to the comments of Engineering Development Board, ZEPL submitted that Engineering Development Board has acknowledged that pursuant to CGO-5/2015, the task of determining the bonafide requirement of power purchaser imported equipment has been assigned to the Ministry of Water and Power. Therefore, the comments of Engineering Development Board should be submitted to the Ministry of Water and Power, if any. ZEPL in this regard is not bound to give any view at this stage.

(vi). The replies submitted by ZEPL were examined and found satisfactory. Accordingly, it was considered appropriate to process the application of ZEPL for the grant of generation licence as stipulated in the Licensing Regulations and NEPRA Licensing (Generation) Rules, 2000 (the Generation Rules).

(D). Analysis of the Authority

(i). The Authority has examined the generation licence application of ZEPL along with information provided with the application including feasibility study of the project, environment impact assessment study, interconnection and dispersal arrangement studies, comments of stakeholders, NEPRA Act, relevant rules & regulations framed under the NEPRA Act and the provisions of the RE Policy.

(ii). Regarding the observations raised by Anwar Kamal Law Associates, the Authority has observed that the same are not specific to the grant of generation licence to ZEPL and are related to regulatory and policy decisions and reiteration of their earlier comments which have already been deliberated upon by the Authority in the cases of upfront tariff in detail. Further, a comprehensive reply in this regard has also been sent to Anwar Kamal Law Associates through NEPRA's letter No. NEPRA/SAT-I/TRF-100/1706 dated December 27, 2016.

(iii). The main features of the application under consideration are that the applicant company i.e. ZEPL was incorporated as a company limited by shares under Section-32 of the Companies Ordinance 1984 (XLVII of 1984), having Corporate Universal Identification No. 0092877 dated April 08, 2015. The

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registered/business office of ZEPL is A/51-A, S.I.T.E. Karachi. The memorandum of association of ZEPL includes the business of power generation and sale as one of its objectives.

(iv). After the issuance of LoI by Energy Department, Govt. of Sindh, the sponsors carried out various studies to assess the feasibility of the project. These studies included the wind resource assessment, geo technical investigation, digital topographic map, initial environmental examination and grid interconnection study. The complete feasibility study was submitted to Energy Department, Govt. of Sindh which has recommended the project for the award of upfront tariff and grant of generation licence.

(v). ZEPL has selected Gamesa (G114/2.0 MW) IEC wind class IIIA wind turbine generators for the project and has proposed to install twenty five (25) wind turbine generators, making the total installed capacity of the generation facility to 50.00 MW. The cut-in, rated and cut-out wind speed for (G114/2.0 MW) wind turbine generators are 3m/s, 10.3m/s and 25m/s respectively, whereas the survival wind speed is 59.5 m/s (maximum 3 seconds).

(vi). Regarding grid interconnection of the project, the Authority observes that ZEPL has carried out an interconnection and system stability study for dispersal of electric power from the above mentioned wind power plant through NTDC. According to the said study, the power generated by ZEPL shall be dispersed at 132-kV level. The dispersal/interconnection arrangement will be consisting of 132-kV double circuit transmission line for looping in-out from ZEPL on the 132-kV single circuit from the wind power plant of Din Energy Limited to Jhimpir-2. NTDC through its letter No. 8806/GM/SGC/NTDC dated December 01, 2016 has approved the interconnection study of ZEPL and has issued power evacuation certificate to ZEPL. NTDC has further clarified that the power to be generated by ZEPL will be evacuated by July 2019 and the power injected through the project of ZEPL will not have any adverse effect on the national grid as required under the grid code.

(vii). Regarding impact of the project on environment, the Authority is of the view that the proposed wind power plant of ZEPL is based on a renewable energy source and does not cause any pollution, however, the operation of the wind power plant may cause some other type of pollution including soil pollution,

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water pollution and noise pollution during construction and operation. In this regard, ZEPL has carried out an Initial Environment Examination Study and Environmental Protection Agency, Govt. of Sindh has accorded its approval for the same.

(viii). Regarding land of the project, the Authority has observed that Land Utilization Department, Govt. of Sindh has allotted 322 acres of land (on 30 years lease basis), to the sponsors of the project in Deh Kohistan 7/3 & 7/4, Tapo Jungshahi, District Thatta, in the Province of Sindh for 50 MW wind power plant.

(ix). Foregoing in view, the Authority is of the considered opinion that the project of ZEPL fulfills the eligibility criteria for grant of generation licence as given under the NEPRA Act and rules & regulations framed there under.

(E). Grant of Generation Licence

(i). The sustainable and affordable energy/electricity is a key prerequisite for socio-economic development of any country. In fact, the economic growth of any country is directly linked with the availability of safe, secure, reliable and cheaper supply of energy/electricity. In view of the said reasons, the Authority is of the considered opinion that for sustainable development, all indigenous power generation resources including renewable energy must be developed on priority basis.

(ii). The existing energy mix of the country is heavily skewed towards the costlier thermal power plants, mainly operating on imported furnace oil. The import of furnace oil for electric power generation not only causes depletion of precious foreign exchange reserves of the country but is also an environmental concern. Therefore, in order to achieve sustainable development it is imperative that indigenous RE resources are given priority for power generation and their development be encouraged. The Energy Security Action Plan 2005 (ESAP) of GoP, also recognizes this very aspect of power generation through RE and envisages that at least 5% of total national power generation capacity to be met through RE resources by 2030. The Authority considers that the proposed project of ZEPL is consistent with the provisions of ESAP. The project will help in diversifying the energy portfolio of the country. Further, it will not only enhance the energy security of the country by reducing the dependence on imported furnace oil

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but will also help reduction in carbon emission by generating clean electricity, thus improving the environment.

(iii). The term of a generation licence under Rules-5(1) of the Generation Rules is to commensurate with the maximum expected useful life of the units comprised in a generation facility, except where an applicant for a generation licence consents to a shorter term. As per international benchmark, the useful life of wind turbine generators is considered as 20 to 25 years. In this regard, it is observed that the anticipated Commercial Operation Date (COD) of the wind power plant of ZEPL is October 31, 2019 and it will have a useful life of more than twenty (20) years from its COD. Foregoing in view, the Authority fixes the term of the generation licence as twenty (20) years from COD of the project.

(iv). Regarding the tariff that ZEPL will charge from its power purchaser/CPPA-G, it is hereby clarified that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate and charges etc. is the sole prerogative of the Authority. In view thereof, the Authority directs ZEPL to charge the power purchaser only such tariff which has been determined, approved or specified by the Authority.

(v). Regarding land of the project, it is clarified that Land Utilization Department, Govt. of Sindh has allotted 322 acres of land to ZEPL for development of 50.00 MW wind power plant. In this regard, the Authority directs ZEPL that the aforementioned land shown in Schedule-I of the generation licence, shall exclusively be used by ZEPL for the proposed wind power project and ZEPL cannot carry out any other activity on this land except with prior approval of the Authority.

(vi). Regarding compliance with the environmental standards, the Authority directs ZEPL to ensure that the project will comply with the environmental standards during the term of the generation licence. In view of the said, the Authority has included a separate article (i.e. Article-10) in the generation licence along with other terms and conditions that the licensee will comply with relevant environmental standards. Further, the Authority directs ZEPL to submit a report on a bi-annual basis, confirming that operation of its project is compliant with required environmental standards as prescribed by the concerned environmental protection agency.

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(vii). The proposed wind power plant of ZEPL will be using renewable energy resource for generation of electric power. Therefore, the project may qualify for carbon credits under the Kyoto Protocol. Under the said protocol, projects coming into operation up to the year 2020 can qualify for carbon credits. ZEPL has informed that the project will achieve COD by October 31, 2019 which is within the deadline of the Kyoto Protocol. In view thereof, an article (i.e. Article-14) for carbon credits and its sharing with the power purchaser has been included in the generation licence. Accordingly, the Authority directs ZEPL to initiate the process in this regard at the earliest so that proceeds for carbon credits are materialized. ZEPL shall be required to share the proceeds of carbon credits with the power purchaser as stipulated in Article-14 of the generation licence.

In view of the above, the Authority hereby approves the grant of generation licence to ZEPL on the terms and conditions set out in the generation licence annexed to this determination. The grant of generation licence shall be subject to the provisions contained in the NEPRA Act, relevant rules, regulations framed there under and other applicable documents.

Authority:

Maj. (R) Haroon Rashid
(Member)

Syed Masood-ul-Hassan Naqvi
(Member)

Himayat Ullah Khan
(Member/Vice Chairman)

Tariq Saddozai
(Chairman)

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National Electric Power Regulatory Authority
(NEPRA)
Islamabad – Pakistan

GENERATION LICENCE

No. WPGL/39/2017

In exercise of the Powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section-15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, the Authority hereby grants Generation Licence to:

ZULAIKHA ENERGY (PVT.) LIMITED

Incorporated under the Companies Ordinance, 1984
Corporate Universal Identification No. 0092877, dated April 08, 2015,

for its Generation Facility/Wind Power Plant Located at Deh Kohistan 7/3 &7/4, Tapo Jungshahi, District Thatta, in the Province of Sindh

(Installed Capacity: 50.00 MW Gross ISO)

to engage in generation business subject to and in accordance with the Articles of this Licence.

Given under my hand on 01st day of ~~January~~ February Two Thousand & Seventeen and expires on 30th day of October Two Thousand & Thirty Nine.

01.02.17

Registrar

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Article-1
Definitions

1.1 In this Licence

(a). "Act" means the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997";

(b). "Applicable Documents" mean the Act, the NEPRA rules and regulations, any documents or instruments issued or determinations made by the Authority under any of the foregoing or pursuant to the exercise of its powers under the Act, the grid code, the applicable distribution code, if any, or the documents or instruments made by the licensee pursuant to its generation licence, in each case of a binding nature applicable to the licensee or, where applicable, to its affiliates and to which the licensee or any of its affiliates may be subject;

(c). "Authority" means the National Electric Power Regulatory Authority constituted under Section-3 of the Act;

(d). "Bus Bar" means a system of conductors in the generation facility/wind power plant of the Licensee on which the electric power of all the wind turbine generators or WTGs is collected for supplying to the Power Purchaser;

(e). "Carbon Credits" mean the amount of Carbon Dioxide (CO_2) and other greenhouse gases not produced as a result of generation of energy by the generation facility/ wind power plant, and other environmental air quality credits and related emissions reduction credits or benefits (economic or otherwise) related to the generation of energy by the generation facility/ wind power plant, which are available or can be obtained in relation to the generation facility/ wind power plant after the COD;

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(f). "Commercial Operations Date (COD)" means the day immediately following the date on which the generation facility of the Licensee is Commissioned;

(g). "CPPA-G" means Central Power Purchasing Agency (Guarantee) Limited or any other entity created for the like purpose;

(h). "Distribution Code" means the distribution code prepared by XW-DISCO(s) and approved by the Authority, as it may be revised from time to time with necessary approval of the Authority;

(i). "Energy Purchase Agreement" means the energy purchase agreement, entered or to be entered into by and between the Power Purchaser and the Licensee, for the purchase and sale of electric energy generated by the generation facility/ wind power plant, as may be amended by the parties thereto from time to time;

(j). "Financing Documents" will have the same meaning as defined in the respective Implementation Agreements to be signed by the Licensee for its generation facility/ wind power plant;

(k). "Grid Code" means the grid code prepared by NTDC and approved by the Authority, as it may be revised from time to time by NTDC with the approval by the Authority;

(l). "HESCO" means Hyderabad Electric Supply Company Limited and its successors or permitted assigns;

(m). "IEC" means the International Electro-technical Commission and its successors or permitted assigns;

(n). "IEEE" means the Institute of Electrical and Electronics Engineers and its successors or permitted assigns;

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(o). "Law" means the Act, relevant rules and regulations made there under and all the Applicable Documents;

(p). "Licensee" means **Zulaikha Energy (Pvt.) Limited** and its successors or permitted assigns;

(q). "NTDC" means National Transmission and Despatch Company Limited and its successors or permitted assigns;

(r). "Policy" means the Policy for Development of Renewable Energy for Power Generation, 2006 of Government of Pakistan as amended from time to time;

(s). "Power Purchaser" means the CPPA-G purchasing electric power on behalf of XW-DISCO(s) from the Licensee, pursuant to an Energy Purchase Agreement for procurement of electricity;

(t). "Regulations" mean the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 as amended or replaced from time to time;

(u). "Rules" mean the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000;

(v). "Wind Power Plant" or "Wind Farm" means a cluster of Wind Turbines in the same location used for production of electric power;

(w). "Wind Turbine Generator" or "WTG" means the machines installed at the generation facility/ wind power plant with generators for conversion of wind energy into electric power/energy;

(x). "XW DISCO" means an Ex-WAPDA distribution company engaged in the distribution of electric power.

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1.2 Words and expressions used but not defined herein bear the meaning given thereto in the Act or rules and regulations issued under the Act.

Article-2
Applicability of Law

This Licence is issued subject to the provisions of the Applicable Law, as amended from time to time.

Article-3
Generation Facilities

3.1 The location, size (capacity in MW), technology, interconnection arrangements, technical limits, technical and functional specifications and other details specific to the generation facility/ wind power plant of the Licensee are set out in Schedule-I of this Licence.

3.2 The net capacity of the generation facility/ wind power plant of the Licensee is set out in Schedule-II hereto.

3.3 The Licensee shall provide the final arrangement, technical and financial specifications and other specific details pertaining to its generation facility/ wind power plant before its COD.

Article-4
Term of Licence

4.1 The Licence is granted for a term of twenty (20) years from the COD of the generation facility/wind power plant.

4.2 Unless suspended or revoked earlier, the Licensee may apply for renewal of this licence ninety (90) days prior to the expiry of the above term, as stipulated in the Regulations.

Article-5
Licence fee

After the grant of this licence, the Licensee shall pay to the Authority the Licence fee, in the amount, manner and at the time set out in the National Electric Power Regulatory Authority (Fees) Rules, 2002.

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Article-6
Tariff

The Licensee shall charge only such tariff which has been determined, approved or specified by the Authority.

Article-7
Competitive Trading Arrangement

7.1 The Licensee shall participate in such manner as may be directed by the Authority from time to time for development of a Competitive Trading Arrangement. The Licensee shall in good faith work towards implementation and operation of the aforesaid Competitive Trading Arrangement in the manner and time period specified by the Authority. Provided that any such participation shall be subject to any contract entered into between the Licensee and another party with the approval of the Authority.

7.2 Any variation or modification in the above-mentioned contracts for allowing the parties thereto to participate wholly or partially in the Competitive Trading Arrangement shall be subject to mutual agreement of the parties thereto and such terms and conditions as may be approved by the Authority.

Article-8
Maintenance of Records

For the purpose of sub-rule (1) of Rule-19 of the Rules, copies of records and data shall be retained in standard and electronic form and all such records and data shall, subject to just claims of confidentiality, be accessible by authorized officers of the Authority.

Article-9
Compliance with Performance Standards

The Licensee shall comply with the relevant provisions of the National Electric Power Regulatory Authority Performance Standards (Generation) Rules 2009 as amended from time to time.

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Article-10
Compliance with Environmental Standards

10.1 The Licensee shall comply with the environmental standards as may be prescribed by the relevant competent authority from time to time.

10.2 The Licensee shall provide a certificate on a bi-annual basis, confirming that the operation of its generation facility is in line with environmental standards as prescribed by the relevant competent authority.

Article-11
Power off take Point and Voltage

The Licensee shall deliver power to the Power Purchaser at the outgoing bus bar of its grid station. The up-gradation (step up) of generation voltage up to the required dispersal voltage level will be the responsibility of the Licensee.

Article-12
Performance Data of Wind Power Plant

The Licensee shall install monitoring mast with properly calibrated automatic computerized wind speed recording meters at the same height as that of the wind turbine generators and a compatible communication/SCADA system both at its wind power plant and control room of the Power Purchaser for transmission of wind speed and power output data to the control room of the Power Purchaser for record of data.

Article-13
Provision of Information

13.1 The obligation of the Licensee to provide information to the Authority shall be in accordance with Section-44 of the Act.

13.2 The Licensee shall in addition to 13.1 above, supply information to the Power Purchaser regarding the wind data specific to the site of the Licensee and other related information on a regular basis and in a manner required by it.

13.3 The Licensee shall be subject to such penalties as may be specified in the relevant rules made by the Authority for failure to furnish such information as may be

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required from time to time by the Authority and which is or ought to be or has been in the control or possession of the Licensee.

Article-14
Emissions Trading /Carbon Credits

The Licensee shall process and obtain emissions/carbon credits expeditiously and credit the proceeds to the Power Purchaser as per the Policy.

Article-15
Design & Manufacturing Standards

15.1 The Wind Turbine Generator or WTG and other associated equipments of the generation facility/ wind power plant shall be designed, manufactured and tested according to the latest IEC, IEEE standards or other equivalent standards in the matter.

15.2 All the plant and equipment of the generation facility/ wind power plant shall be unused and brand new.

Article-16
Power Curve

The power curve for the individual Wind Turbine Generator or WTG provided by the manufacturer and as mentioned in Schedule-I of this Generation Licence, shall form the basis in determining the cumulative Power Curve of the generation facility/wind power plant.

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SCHEDULE-I

The Location, Size (i.e. Capacity in MW), Type of Technology, Interconnection Arrangements, Technical Limits, Technical/Functional Specifications and other details specific to the Generation Facility/Wind Farm of the Licensee are described in this Schedule.

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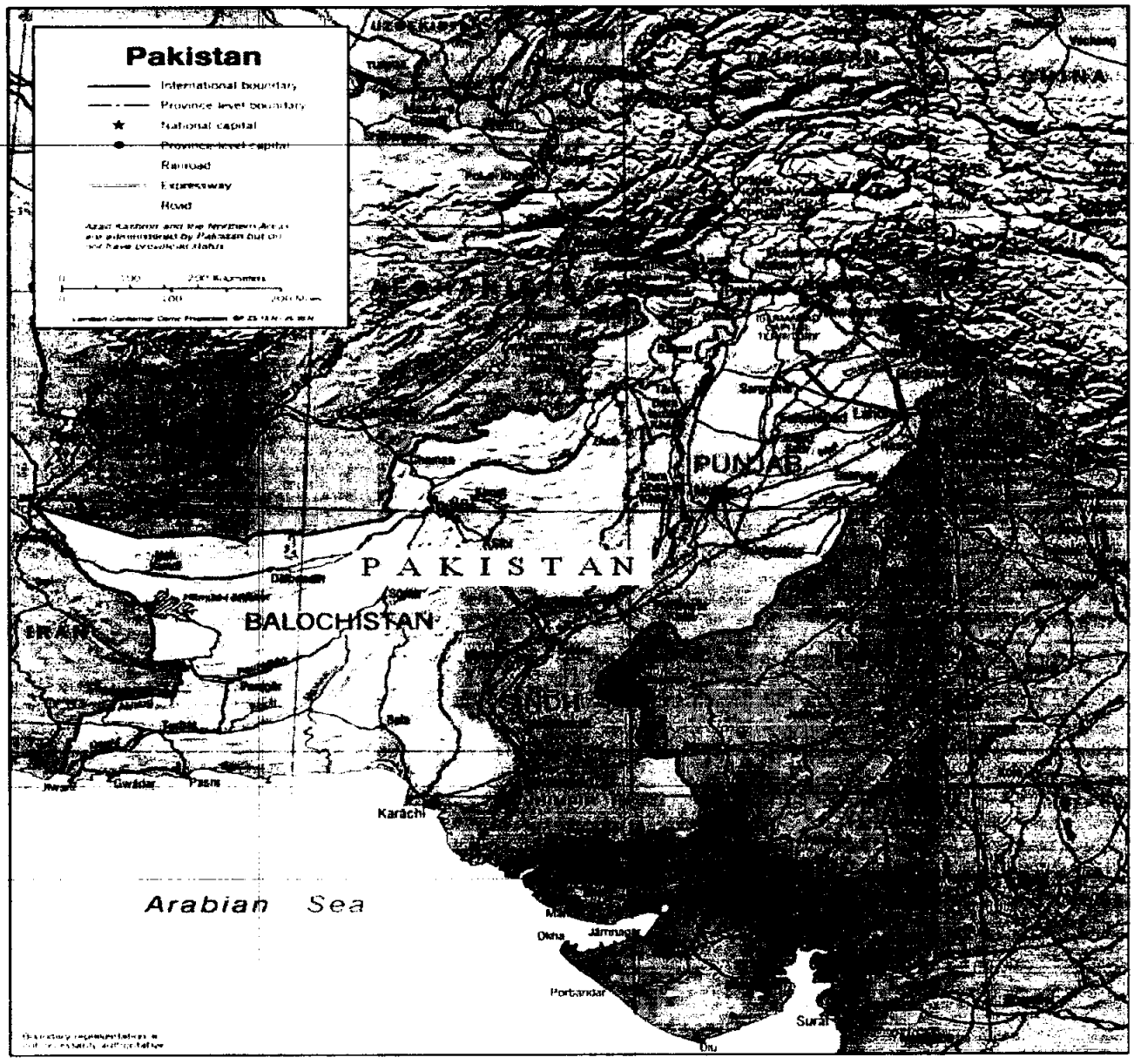
Site Location of the Generation Facility/Wind Power Plant of Zulaikha Energy (Pvt.) Limited (ZEPL)



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Layout of the Generation Facility/ Wind Power Plant of ZEPL

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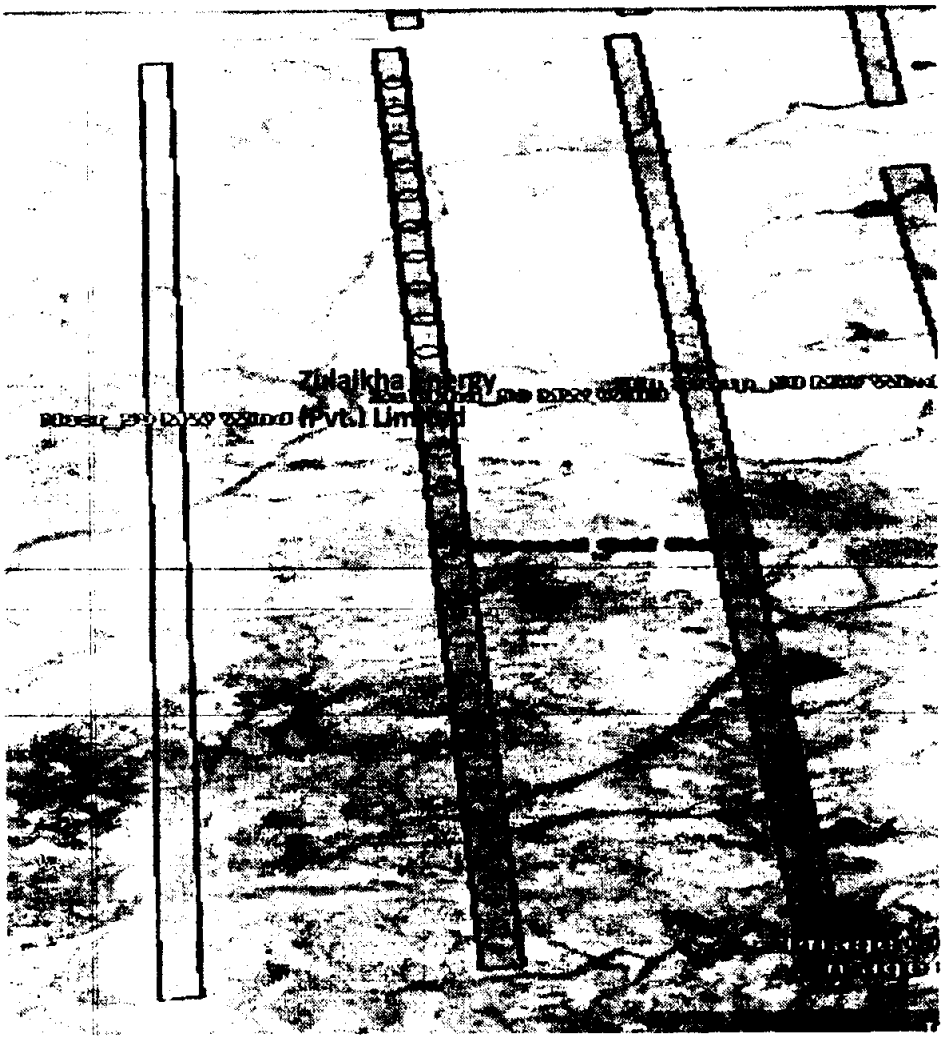
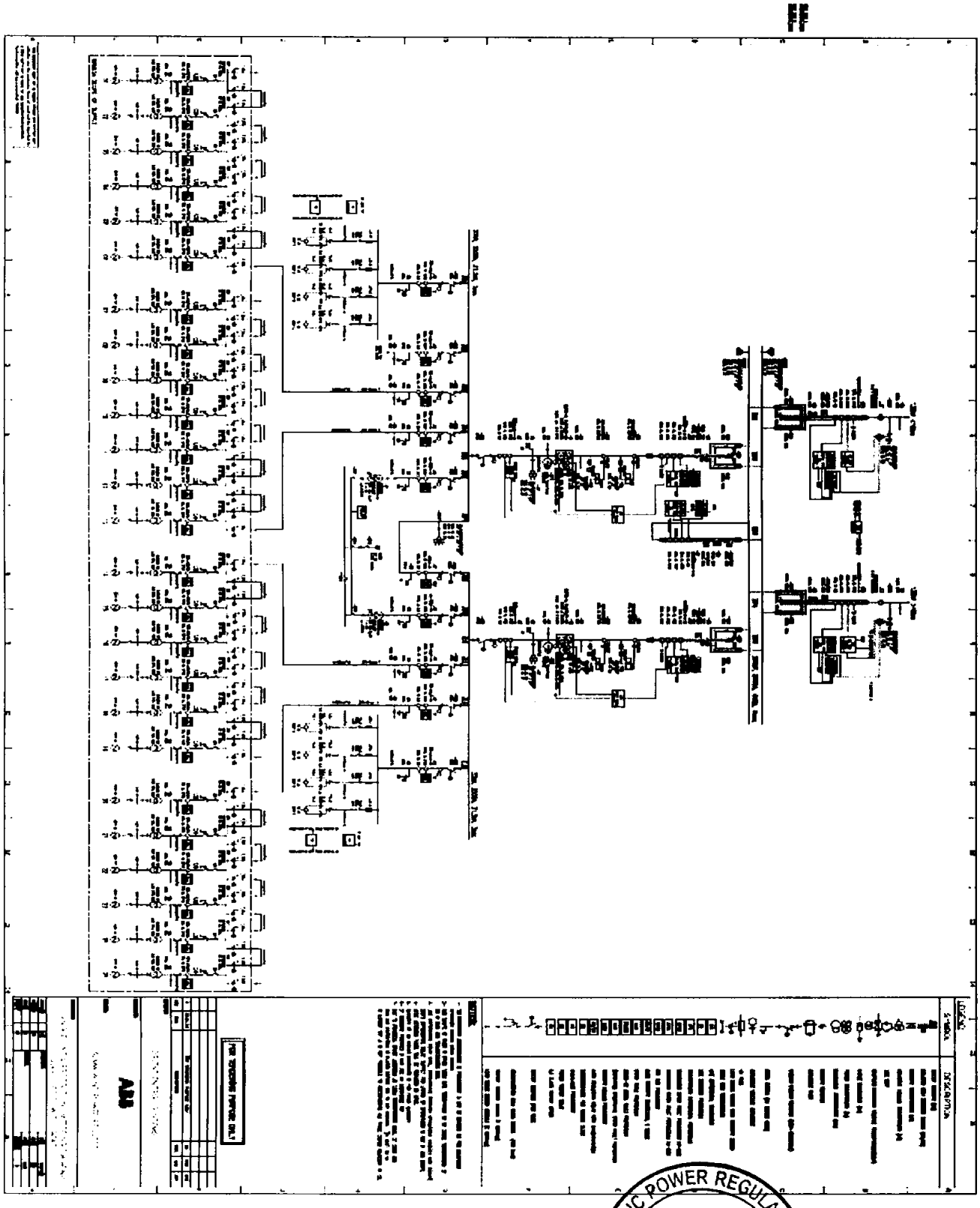
Land Coordinates and Micro-Sitting of the Generation Facility/Wind Power Plant of ZEPL

Total Land: 322 Acres		
Sr. No.	Latitude	Longitude
1	24°54' 34.92"N	67° 47' 56.38"E
2	24°54' 39.08"N	67° 47' 59.02"E
3	24°57' 06.88"N	67° 43' 29.41"E
4	24°57'10.76"N	67° 43' 32.46"E



Single Line Diagram (Electrical) of the Generation Facility/Wind Power Plant of ZEPL



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Interconnection Arrangement for Dispersal of Power from the Generation Facility/Wind Power Plant of ZEPL

The power generated from the Generation Facility/Wind Power Plant/Wind Farm of ZEPL shall be dispersed to the National Grid through the load center of HESCO.

(2). The proposed Interconnection Arrangement /Transmission Facilities for dispersal of power will consist of the following:-

(a). A new 220/132 kV Jhimpir-2 substation 3x250 MVA, 220/132 kV transformers.

(b). 220 kV double circuit (D/C) transmission line, approx. 18 km long, on twin-bundled Greeley conductor for looping in/out of one circuit of the existing Jamshoro- KDA-33 D/C transmission line at Jhimpir-2.

(c). 220 kV D/C transmission line, approx. 7 km long, on twin-bundled Greeley conductor for looping In/Out of one of the planned Jhimpir New (Jhimpir-1)- Gharo New D/C transmission line at Jhimpir-2.

(d). 132 kV D/C transmission line, approx. 50 km long on twin bundled Greeley conductor for connecting 7 wind power plants including ZEPL with Jhimpir-2. In this scheme, the interconnection of ZEPL includes 132 kV D/C transmission line, approx. 2 km long, on twin-bundled Greeley conductor for looping in/out from ZEPL on the 132kV single circuit from Din Energy Limited to Jhimpir-2.

(3). Any change in the above mentioned interconnection arrangement /transmission facilities duly agreed by ZEPL, NTDC and HESCO shall be communicated to the Authority in due course of time.

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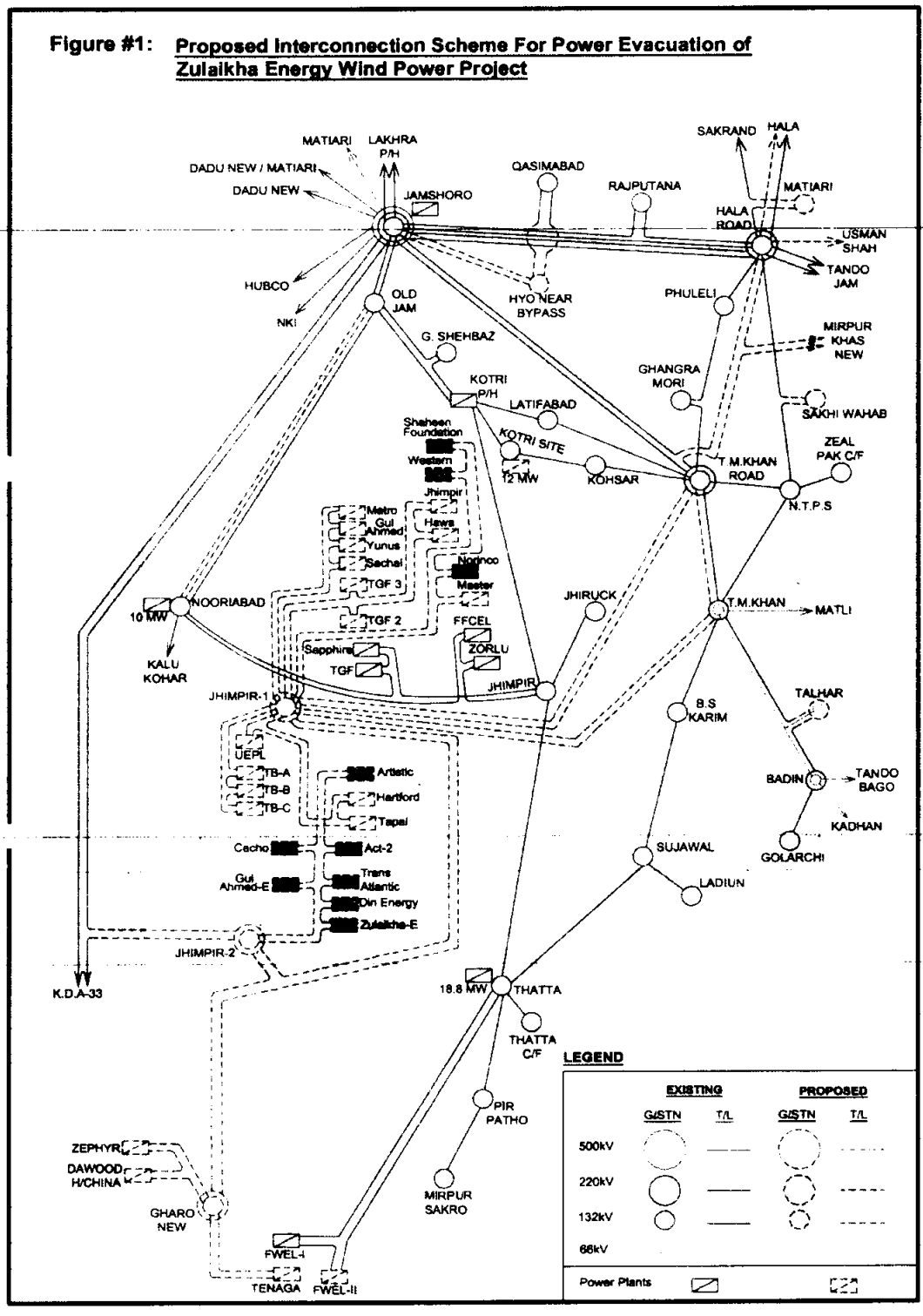
Schematic Diagram for Interconnection Arrangement for Dispersal of Power from the Generation Facility/Wind Power of ZEPL

Figure #1: Proposed Interconnection Scheme For Power Evacuation of Zulaikha Energy Wind Power Project



Detail of Generation Facility/Wind Power Plant/ Wind Farm of ZEPL

(A). General Information

(i).	Name of the Company/Licensee	Zulaikha Energy (Pvt.) Limited
(ii).	Registered/Business Office	A/51-A, S.I.T.E, Karachi
(iii).	Plant Location	Deh Kohistan 7/3 & 7/4 Tapo Jungshahi, District Thatta, in the Province of Sindh
(iv).	Type of Generation Facility	Wind Farm/Wind Power Plant

(B). Wind Farm Capacity & Configuration

(i).	Wind Turbine Type, Make & Model	Gamesa G114-2.0 MW
(ii).	Installed Capacity of Wind Farm (MW)	50.00 MW
(iii).	Number of Wind Turbine Units/Size of each Unit (KW)	25x2.00 MW

(C). Wind Turbine Details

(a).	**Rotor**	
(i).	Number of blades	3
(ii).	Rotor diameter	114 m
(iii).	Swept area	10207 m^2
(iv).	Power regulation	Combinations of blade pitches angle adjustment, and generator/converter torque control.
(v).	Cut-in wind speed	3 m/s
(vi).	Cut-out wind speed	25 m/s
(vii).	Rated wind speed	13.07 m/s
(viii).	Survival wind speed	59.5 m/s (Maximum 3 sec)

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(ix).	Pitch regulation	Electric motor drives a ring gear mounted to the inner race of the blade pitch bearing.
(b).	**Gearbox**	
(i).	Type	3 combined stages: 1 stage planetary, 2 parallel shift gears
(ii).	Gear ratio	1:128.5
(iii).	Main shaft	Cast Shaft
(c).	**Blades**	
(i).	Blade length	56 m
(ii).	Material	Composite material reinforced with fiberglass through resin infusion technology.
(d).	**Generator**	
(i).	Nominal Power	2040 kVA
(ii).	Voltage	690 V
(iii).	Type	Doubly fed with coil rotor and slip rings
(iv).	Degree of Protection	IP54 Turbine-IP21 Ring Body
(v).	Coupling	Main Shaft: Cone Collar High Speed Shaft: Flexible Coupling
(vi).	Power factor	0.95
(e).	**Control System**	
(i).	Type	Automatic or manually controlled
(ii).	Scope of monitoring	Remote monitoring of different parameters, e.g. temperature sensors, pitch parameters, speed, generator torque, wind speed and direction, etc.
(iii).	Recording	Production data, event list, long and short-term trends
(f).	**Brake**	
(i).	Design	Mechanical brakes
(ii).	Operational brake	Aerodynamic brake achieved by feathering blades

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(iii).	Secondary brake	Mechanical brakes on high speed shaft of gearbox
(g).	**Tower**	
(i).	Type	Conical barrel tube
(ii).	Hub height	80 m
(h).	**Yaw System**	
(i).	Yaw bearing	PETP
(ii).	Brake	Active Yaw
(iii).	Yaw drive	Motor Drive
(iv).	Speed	0.42/s controlling speed
(i).	**Other Details**	
(i).	Project Commissioning Date (Anticipated)	October 31, 2019
(ii).	Expected Life of the Project from Commercial Operation Date (COD)	20 Years

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Power Curve of Wind Turbine Generator of Gamesa G114/2.0 (Tabular)

[illegible]	[illegible]
3	26
4	135
5	319
6	581
[illegible]	[illegible]
8	1408
[illegible]	[illegible]
10	1977
[illegible]	[illegible]
12	1999
[illegible]	[illegible]
14	2000
[illegible]	[illegible]
16	2000
[illegible]	[illegible]
18	2000
[illegible]	[illegible]
20	2000
[illegible]	[illegible]
22	1906
[illegible]	[illegible]
24	1455
[illegible]	[illegible]

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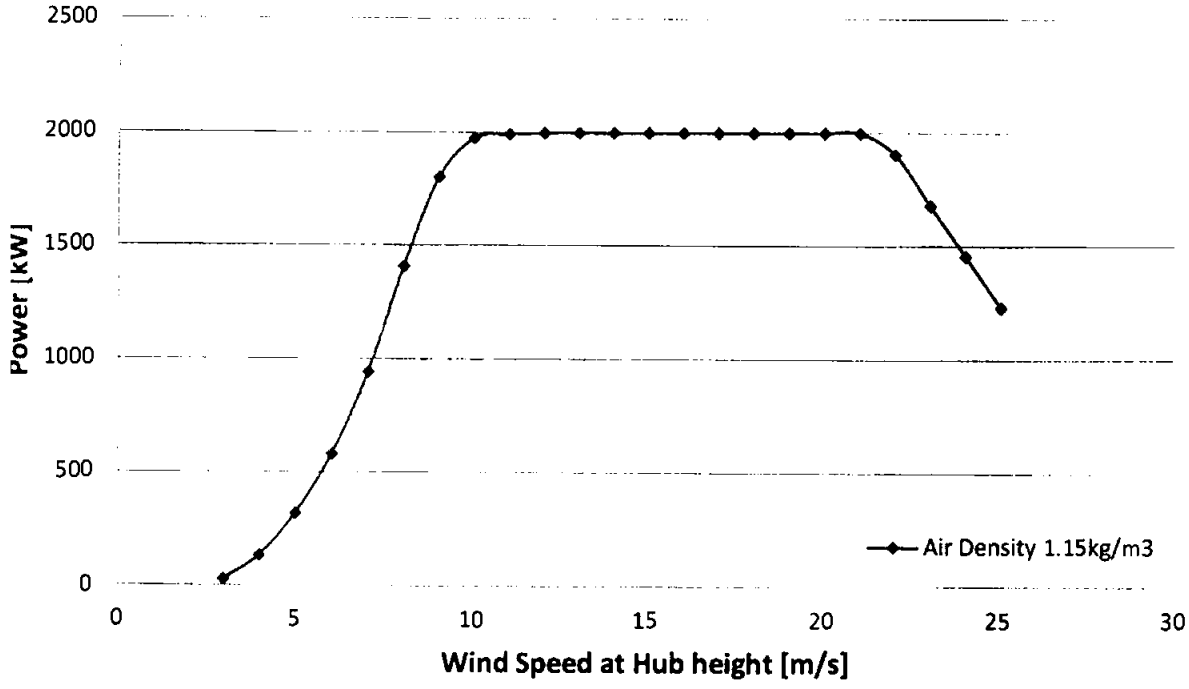
Power Curve of Wind Turbine Generator of Gamesa G114/2.0 (Graphical)



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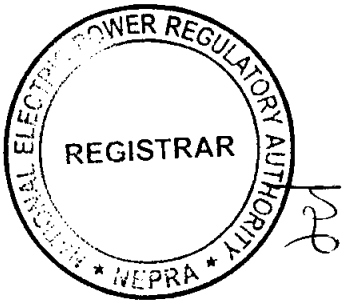
SCHEDULE-II

The Total Installed/Gross ISO Capacity (MW), Total Annual Full Load Hours, Average Wind Turbine Generator (WTG) Availability, Total Gross Generation of the Generation Facility/Wind Farm (in GWh), Array & Miscellaneous Losses (GWh), Availability Losses (GWh), Balance of Plant Losses (GWh) Annual Energy Generation (GWh) and Net Capacity Factor of the Generation Facility /Wind Farm of Licensee are given in this Schedule



SCHEDULE-II

(1).	Total Installed Gross ISO Capacity of the Generation Facility /Wind Farm (MW/GWh)	50.00 MW
(2).	Total Annual Full Load Hours	3066 Hrs
(3).	Average Wind Turbine Generator (WTG) Availability	97.0 %
(4).	Total Gross Generation of the Generation Facility/Wind Farm (in GWh)	173.7 GWh
(5).	Array & Miscellaneous Losses GWh	12.58 GWh
(6).	Availability Losses GWh	4.72 GWh
(7).	Balance of Plant Losses GWh	3.14 GWh
(8).	Annual Energy Generation (20 years equivalent Net AEP) GWh	153.3 GWh
(9).	Net Capacity Factor	35.00 %

Note

All the above figures are indicative as provided by the Licensee/ZEPL. The net energy available to power purchaser for dispatch will be determined through procedures contained in the energy purchase agreement.

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