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-332/ 259-66

January 05, 2017

Mr. Yousuf Mehboob Khan
Chief Executive Officer,
Trident Power JB (Private) Limited,
Suite # 8, Ground Floor, Evacuee Trust Complex,
F-5/1, Islamabad.
Tel: 051-2870422-23

Subject: **Generation Licence No. IGSPL/73/2017**
Licence Application No. LAG-332
Trident Power JB (Private) Limited (TPJBPL)

Reference: *Your application vide letter No. Nil, dated March 04, 2016, received on March 08, 2016.*

Enclosed please find herewith Generation Licence No. IGSPL/73/2017 granted by National Electric Power Regulatory Authority (NEPRA) to Trident Power JB (Private) Limited (TPJBPL) for its 4.65 MW Hydel Generation facilities located on Lower Bari Doab Canal at (RD 260+000), Okara Cantt, District Okara, in the province of Punjab, 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 (IGSPL/73/2017)

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

05.01.17

(Syed Safeer Hussain)

Copy to:

1. Secretary, Ministry of Water and Power, Block – A, Pak Secretariat, Islamabad.
2. Chief Executive Officer, NTDC, 414-WAPDA House, Lahore.
3. Chief Executive Officer, CPPA-G, 6th Floor, Shaheed-r-Millat Secretariat, Jinnah Avenue, Blue Area, Islamabad
4. Managing Director, Punjab Power Development Board (PPDB), Energy Department 1st Floor, Irrigation Secretariat, Old Anarkali, Lahore.
5. Director General, Environment Protection Department, National Hockey Stadium, Ferozpur Road, Lahore.
6. Chief Executive Officer, Lahore Electric Supply Company Limited, 22-A, Queens Road, Lahore.
7. Chairman, Indus River System Authority (IRSA), Block R-3, G-7 Markaz, Sitara Market, Islamabad

National Electric Power Regulatory Authority
(NEPRA)

Determination of the Authority
in the Matter of Application of Trident Power JB (Private) Limited
for the Grant of Generation Licence

December 29, 2016
Case No. LAG-332

(A). Background

(i). Pakistan is primarily an agricultural country and almost seventy percent (70%) of its population is directly or indirectly linked with this sector. In order to meet with the water requirements of the agriculture sector, a large number of link canals, head works and other canals have been built. The canal network laid all over the country offers a very good opportunity to harness the hydel potential for electric power generation.

(ii). In order to utilize the said potential in the province of Punjab, Government of Punjab has taken many significant measures. Punjab Power Development Board (PPDB) has issued Letter of Interests (LOI)s to various project developers for construction of hydro power projects on the canals. PPDB also issued two separate LOIs dated April 05, 2013 and April 12, 2013 in favor of Trans Tech Pakistan Limited. The LOIs envisaged development of 2.5 MW and 3.00 MW hydro power plants on Lower Bari Doab Canal (LBDC) at RD 285+545 and RD 258+654, District Sahiwal, in the province of Punjab.

(iii). In order to implement the project, Trans Tech Pakistan Limited incorporated a special purpose company in the name of Trident Power JB (Private) Limited (TPJBPL). Accordingly, TPJBPL hired the services of Anwar Integrated Projects and Engineering (Pvt.) Limited for preparing the feasibility study of the project to be approved by Panel of Experts appointed by the PPDB. While conducting the feasibility study, based on the remodeling of the LBDC, it was found more feasible to develop a 4.6 MW hydro power project at RD 260+000

POWER REGULATORY AUTHORITY
REGISTRAR

near Okara cantt, in the province of Punjab. Therefore, the sponsor proposed to merge the two (02) sites into one (01) having installed capacity of 4.6 MW at RD260+000 for making the project more feasible. The said proposal of the sponsor was accepted by Panel of Experts appointed by PPDB. The scope of the feasibility study included the collection and review of the previous studies, existing data, site investigations, infrastructure requirements, Initial Environmental Examination (IEE), tariff calculation (including economic/financial analysis), term of financing and project cost etc. The said feasibility study of the project was approved by the Panel of Experts appointed by PPDB.

(iv). After approval of the feasibility study, PPDB directed TPJBPL to approach the Authority for grant of generation licence and adoption of upfront tariff for small hydropower generation projects. Accordingly, TPJBPL decided to approach the Authority for the grant of generation licence.

(B). Filing of Application

(i). In accordance with Section-15 of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 ("the NEPRA Act"), TPJBPL filed/submitted an application for the grant of generation licence on March 08, 2016.

(ii). The Registrar examined the application to confirm its compliance with the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 ("the Licensing Regulations"). The Registrar found the same non-compliant with the Licensing Regulations and directed TPJBPL for submitting the missing information/documents. TPJBPL completed the missing information/documentation on March 30, 2016. Accordingly, the Registrar submitted the matter for the consideration of the Authority seeking admission of the application or otherwise.

(iii). The Authority considered the matter and found the form and content of the application in compliance with Regulation-3 of the Licensing Regulations. The Authority admitted the application for consideration of the grant of the

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR

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 about the admission of the application of TPJBPL, to invite the general public for submitting their comments in the matter as stipulated in Regulation-8 of Licensing Regulations. Further, the Authority also approved the list of the relevant stakeholders to inform regarding admission of the application of TPJBPL and to seek their comments for assistance of the Authority in the matter.

(iv). Accordingly, the advertisement was published in one Urdu (the daily Express) and one English (the News) Newspapers on May 17, 2016. Apart from the above, separate letters were also sent to government ministries, their attached departments, representative organizations and individual experts etc. on May 17, 2016. The said stakeholders were directed to submit their views/comments for assistance of the Authority.

(C). Comments of Stakeholders

(i). In response to the above, the Authority received comments from five (05) stakeholders. These included Indus River System Authority (IRSA), Punjab Power Development Board (PPDB), Energy Department Government of Sindh, Pakistan Water and Power Development Authority (WAPDA) and Lahore Electric Supply Company Limited (LESCO). The salient points of the comments of said stakeholders are summarized below:-

(a). IRSA in its comments stated that the applicant may be instructed to make a presentation/briefing on the project to IRSA for obtaining NOC for the project;

(b). PPDB in its comments supported the request of TPJBPL for the grant of generation licence;

(c). Energy Department, Government of Sindh sought some

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR

technical data (i.e. Technical detail, specification of machinery, technology of combustion) for their detailed comments on the project;

(d). WAPDA in its comments stated that it strongly supports the grant of generation licence to TPJBPL as the construction of project would extend the cheap energy into the national grid; and

(e). LESCO submitted that PPDB has requested to issue the power acquisition consent in favor of TPJBPL, as the sponsor/TPJBPL has applied for generation licence and acceptance of upfront tariff for small hydro power projects with NEPRA. LESCO commented that prior to issuance of the power acquisition consent TPJBPL is required to provide the generation licence and approval of upfront tariff issued by NEPRA.

(i). The above comments of the stakeholders were examined and the same were found supportive to the grant of generation licence to TPJBPL, except certain observations raised by IRSA and Energy Department Government of Sindh. On the observations of IRSA, the Authority directed TPJBPL to liaison with IRSA for obtaining NOC of the project. In response, TPJBPL took up the matter with IRSA and IRSA issued NOC to TPJBPL for the installation of 4.65 MW hydro power plant. Energy Department Government of Sindh in its comments requested for providing some technical data regarding the project, to provide further comments. The required data was provided to Energy Department Government of Sindh through this office letter dated June 14, 2016. However, no further comments were received from Energy Department Government of Sindh.

(ii). Foregoing in view, the Authority considered it appropriate to process the application of TPJBPL for the grant of generation licence as stipulated in the

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

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 TPJBPL along with information provided with the generation licence application including feasibility study of the project, interconnection and dispersal arrangement studies and relevant rules & regulations.

(ii). The applicant company (i.e. TPJBPL) is a Private Limited company incorporated under Section-32 of the Companies Ordinance, 1984 (XLVII of 1984), having Corporate Identification No. 0083146, dated March 18, 2013. The registered/business office of the company is Suit No. 8, Ground floor, Evacuee Trust Complex, F-5/1, Islamabad. The memorandum of association of the company, *inter alia*, includes the business of power generation as one of its business objects. According to the submitted memorandum of association of the company, four (04) individual businessmen namely Fiaz Ahmad, Yousaf Mehboob Khan, Zafar Ikram Sheikh and Syed Hadi Ali Rizvi own shares of the company having 25%, 25%, 26% and 24% proportion of the shares respectively.

(iii). TPJBPL intends to set up a hydel based generation facility at LBDC at RD 260+000 Okara cantt, Tehsil & District Okara in the Province of Punjab. According to the feasibility study, the proposed hydro power plant would be consisting of three (03) Horizontal Kaplan units with rated output of 1550 KW each.

(iv). Regarding feasibility study of the project, the Authority observes that TPJBPL has submitted the same including *inter alia* collection and review of the previous studies, existing data, site investigations, infrastructure requirements, Initial Environmental Examination (IEE), tariff calculation (including economic/financial analysis), term of financing and project cost etc. The said

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY ★ NEPRA ★ REGISTRAR

feasibility study of the project has been approved by the Panel of Experts appointed by PPDB.

(v). Regarding grid interconnection of the project, the Authority observes that TPJBPL has submitted interconnection study of the project duly approved by LESCO. The said interconnection envisages that electric power generated by the hydropower plant of TPJBPL will be supplied to the 132/11KV Okara cantt substation of LESCO through a double circuit 11 KV transmission line of 5 KM length using Osprey conductor.

(vi). Regarding impact of the project on environment, the Authority is of the opinion that the proposed hydropower plant of TPJBPL for which generation licence has been sought, is based on a renewable energy source and does not cause any pollution however, the operation of the same may cause some other type of pollution including soil pollution, water pollution and noise pollution during construction and operation. In this regard, TPJBPL carried out an Initial Environment Examination study and obtained No Objection Certificate from Environmental Protection Agency, Government of Punjab.

(vii). Regarding land of the project, the Authority observes that Government of Punjab has allocated 195 Kanals of land to TPJBPL at Lower Bari Doab Canal at (RD 260+000), Okara cantt, District Okara, in the Province of Punjab.

(viii). In view of the clarification and justifications given above, the Authority is of the considered view that the project of TPJBPL fulfills the eligibility criteria for grant of generation licence as given under the NEPRA Act, rules and regulations and other applicable documents.

(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

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

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 fuel. The continuous import of furnace oil not only creates pressure on the 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 renewable energy resources are given priority for power generation and their development is encouraged. The Energy Security Action Plan 2005 approved by the Government of Pakistan, duly recognizes this very aspect of power generation through renewable energy and envisages that at least 5% of total national power generation capacity (i.e. 9700 MW) to be met through renewable energy resources by 2030.

(iii). The Authority considers that the proposed project of TPJBPL is consistent with the provisions of Energy Security Action Plan 2005. 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 but will also help reduction in carbon emission by generating clean electricity, thus improving the environment.

(iv). The term of a generation licence under Rules-5(1) of the Rules is to commensurate with the maximum expected useful life of the units comprised in a generating facility, except where an applicant for a generation licence consents to a shorter term. According to the information provided by TPJBPL its hydropower plant will achieve Commercial Operation Date (COD) by November 15, 2018 and will have a useful life of thirty (30) years from its COD. In this regard, TPJBPL has requested that the term of the proposed generation licence may be fixed as thirty (30) years, consistent with the term of its proposed Energy Purchase Agreement. The Authority considers that the information provided by TPJBPL on useful life of

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR

its hydropower plant is consistent with the international benchmarks and with other similar cases. Forgoing in view, the Authority fixes the term of the generation licence as thirty (30) years from COD of the project.

(v). Regarding the tariff, 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 of the said, the Authority through Artcile-6 of the generation licence directs TPJBPL to charge the power purchaser only such tariff which has been determined, approved or specified by the Authority. The Authority directs TPJBPL to adhere to the Article-6 of the generation licence in letter and spirit without any exception.

(vi). Regarding land of the project as mentioned in the Schedule-I of the generation licence, the Authority directs TPJBPL that the same shall be exclusively used by TPJBPL for the proposed hydropower plant and TPJBPL cannot carry out any other generation activity on this land except with prior approval of the Authority.

(vii). Regarding compliance with the environmental standards, the Authority directs TPJBPL 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. Artcle-10) in the generation licence along with other terms and conditions that the licensee will comply with relevant environmental standards. Further, the Authority directs TPJBPL 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.

(viii). The proposed hydropower plant of TPJBPL will be using renewable energy resource for generation of electric Power. Therefore, the project may qualify for the carbon credits under the Kyoto Protocol. Under the said protocol, projects coming into operation up to the year 2020 can qualify for the carbon credits. TPJBPL has informed that the project will achieve COD by November 15,

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

2018 which is within the deadline of the Koyoto Protocol. In view of this, an article (i.e. Article-13) for carbon credits and its sharing with the power purchaser has been included in the generation licence. In view of the said, the Authority directs TPJBPL to initiate the process in this regard at the earliest so that proceeds for the carbon credits are materialized. TPJBPL shall be required to share the proceeds of the carbon credits with the power purchaser as stipulated in Article-13 of the generation licence.

(ix). In view of the above, the Authority hereby approves the grant of generation licence to TPJBPL on the terms and conditions set out in the generation licence annexed to this determination. The grant of generation licence will 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)

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

05.01.17

National Electric Power Regulatory Authority (NEPRA)
Islamabad – Pakistan

GENERATION LICENCE
No. IGSPL/73/2017

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:

TRIDENT POWER JB (PRIVATE) LIMITED

Incorporated under the Companies Ordinance, 1984
Universal Identification No. 0083146, dated March 18, 2013

for its Hydel Generation Facilities Located on Lower Bari Doab Canal at (RD 260+000), Okara Cantt, District Okara, in the Province of Punjab

(Installed Capacity: 4.65 MW Gross)

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

Given under my hand on 05th day of January, Two Thousand & Seventeen, and expires on 14th day of November, Two Thousand & Forty Eight.

05.01.17

Registrar

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY ★ NEPRA ★ REGISTRAR

Article-1
Definitions

1.1 In this Licence

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

(b) "Applicable Documents" have the same meaning as defined in the Rules

(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 of the Licensee on which the electric power of all the generators is collected for supplying to the power purchaser;

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

(f) "Carbon Credits" mean the amount of carbon dioxide (CO_2) and other greenhouse gases not produced as a result of generation of electric power by the generation facility of the Licensee and other environmental air quality credits and related emissions reduction credits or benefits (economic or otherwise) related to the generation of electric power by the generation facility, which are available or can be obtained in relation to the generation facility;

(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;

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR

(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, as may be amended by the parties thereto from time to time;

(j) "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;

(k) "IEC" means "the International Electrotechnical Commission and its successors or permitted assigns;

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

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

(n) "LESCO" means Lahore Electric Supply Company Limited and its successors or permitted assigns;

(o) "Licensee" means **Trident Power JB (Private) Limited** and its successors or permitted assigns;

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

(q) "Policy" means "the Punjab Power Generation Policy, 2006 (Revised 2009) " of Government of Punjab as amended from time to time;

(r) "Power Purchaser" means an entity which purchases electricity from the Licensee, pursuant to an Energy Purchase Agreement for procurement of electricity;

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR

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

(t) "Licensing Regulations" mean the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999.

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
Application 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 functional specifications and other details specific to the power generation facilities of the Licensee are set out in Schedule-I of this Licence.

3.2 The net capacity of the generation facilities 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 before its COD.

Article-4
Term of Licence

4.1 The Licence is granted for a term of thirty (30) years from the COD of the generation facility.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

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

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 formand all such records

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR

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.

Article-10
Compliance with Environmental Standards

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

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
Provision of Information

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

12.2 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 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-13
Emissions Trading /Carbon Credits

The Licensee shall process and obtain emissions/carbon credits

expeditiously and credit the proceeds to the Power Purchaser as per prevailing Policy issued by the Government of Pakistan or any such other policy on renewable energy issued by the concerned provincial Government.

Article-14
Design & Manufacturing Standards

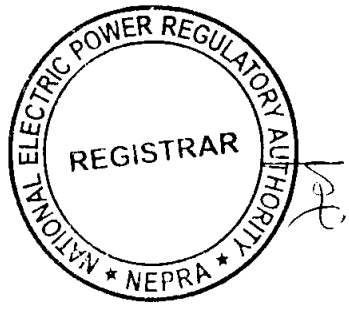
14.1 The Turbines, Generators and other associated equipment of the generation facility shall be designed, manufactured and tested according to the latest IEC, IEEE standards or other equivalent standards in the matter.

14.2 All the plant and equipment of the generation facility shall be unused and brand new.

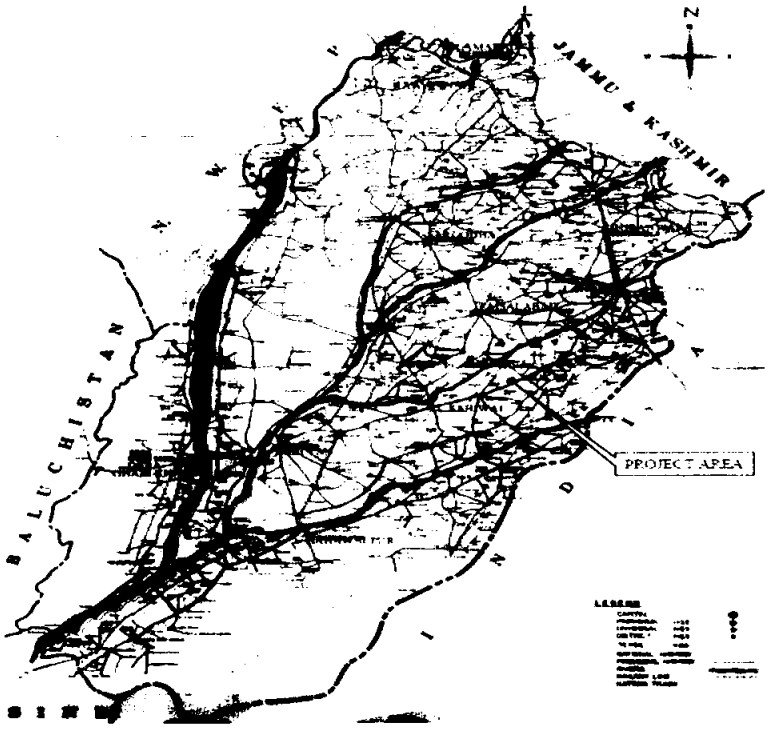
NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

SCHEDULE-I

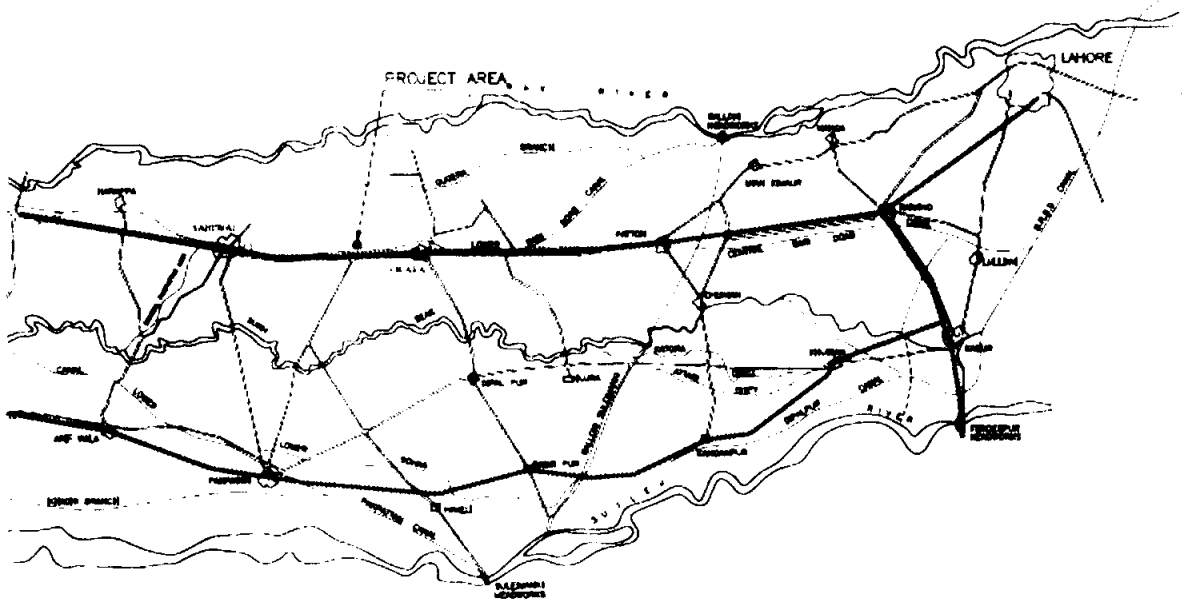
The Location, Size (i.e. Capacity in MW), Type of Technology, Interconnection Arrangements, Technical Limits, Technical/Functional Specifications and other details specific to the Generation Facilities of the Licensee are described in this Schedule.



Location
of the Generation Facility/Hydropower Plant



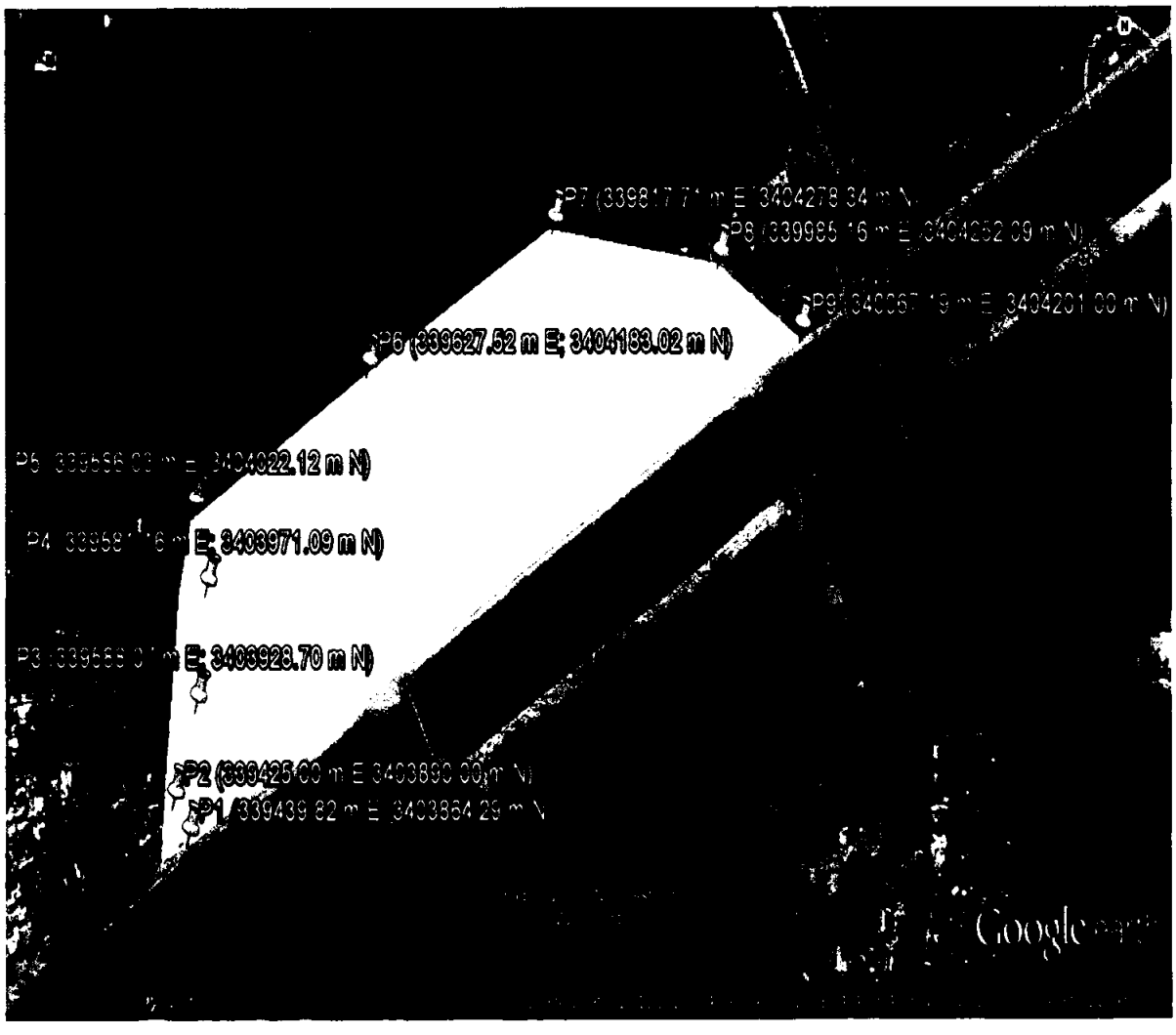
MAP OF PAKISTAN



NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

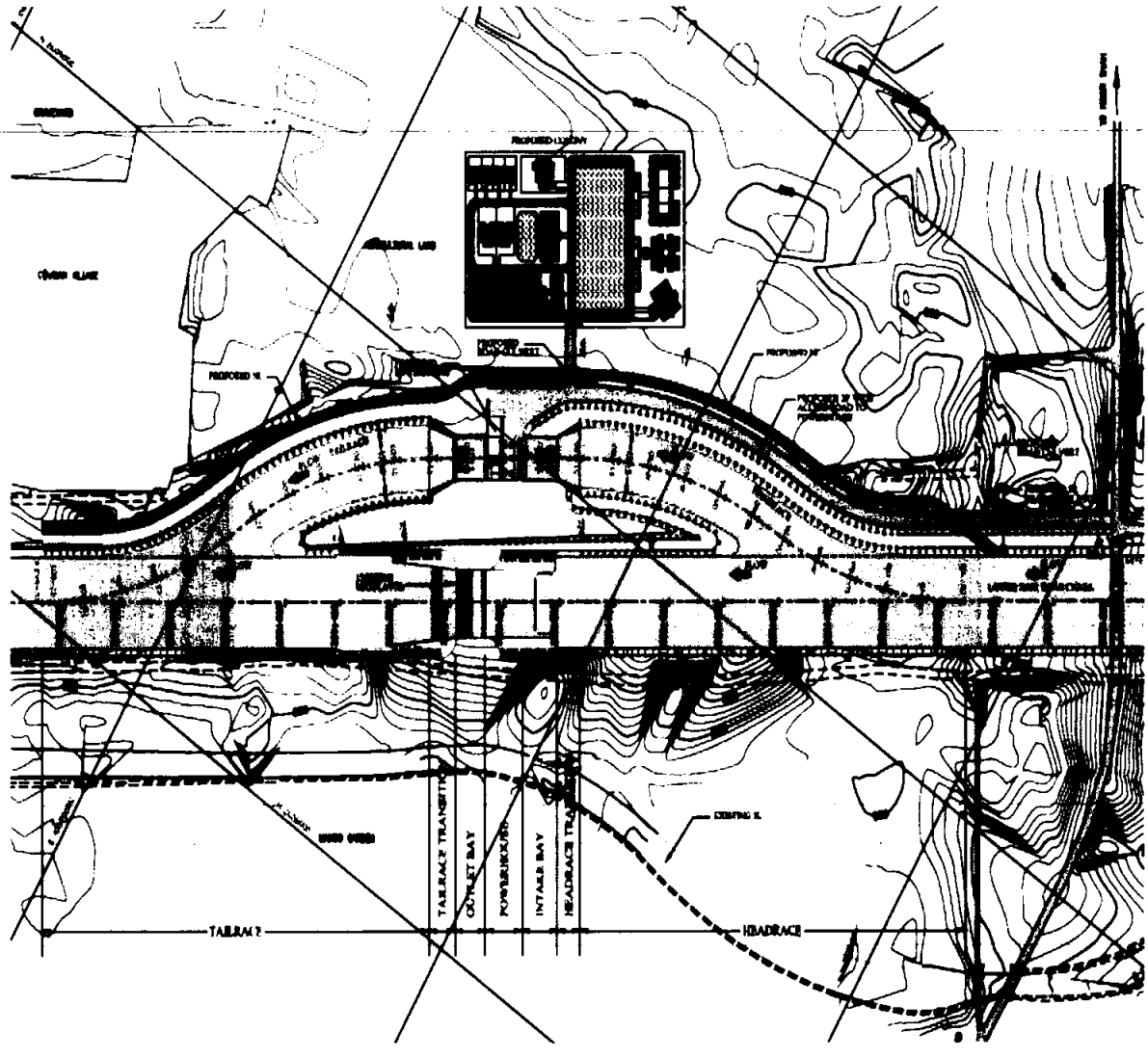
Land
of the Generation Facility/Hydropower Plant

Total Land Area: 195 Kanals

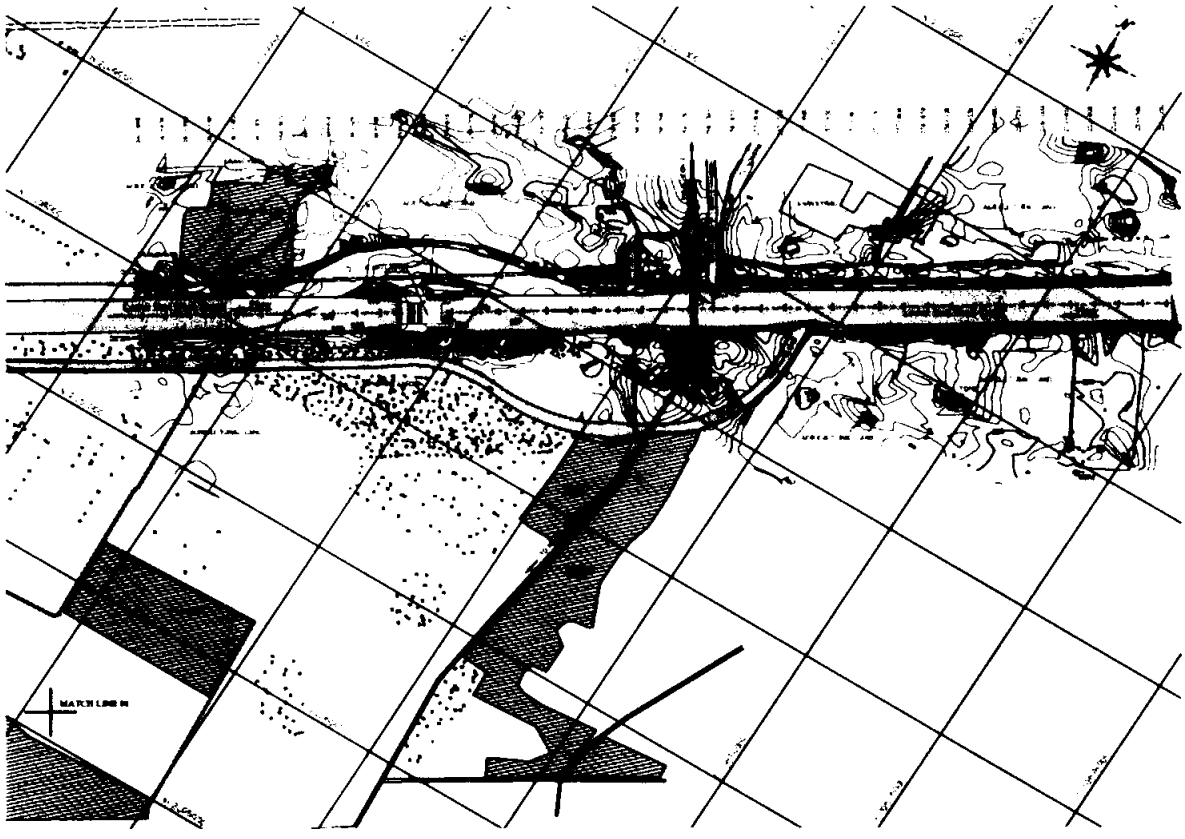


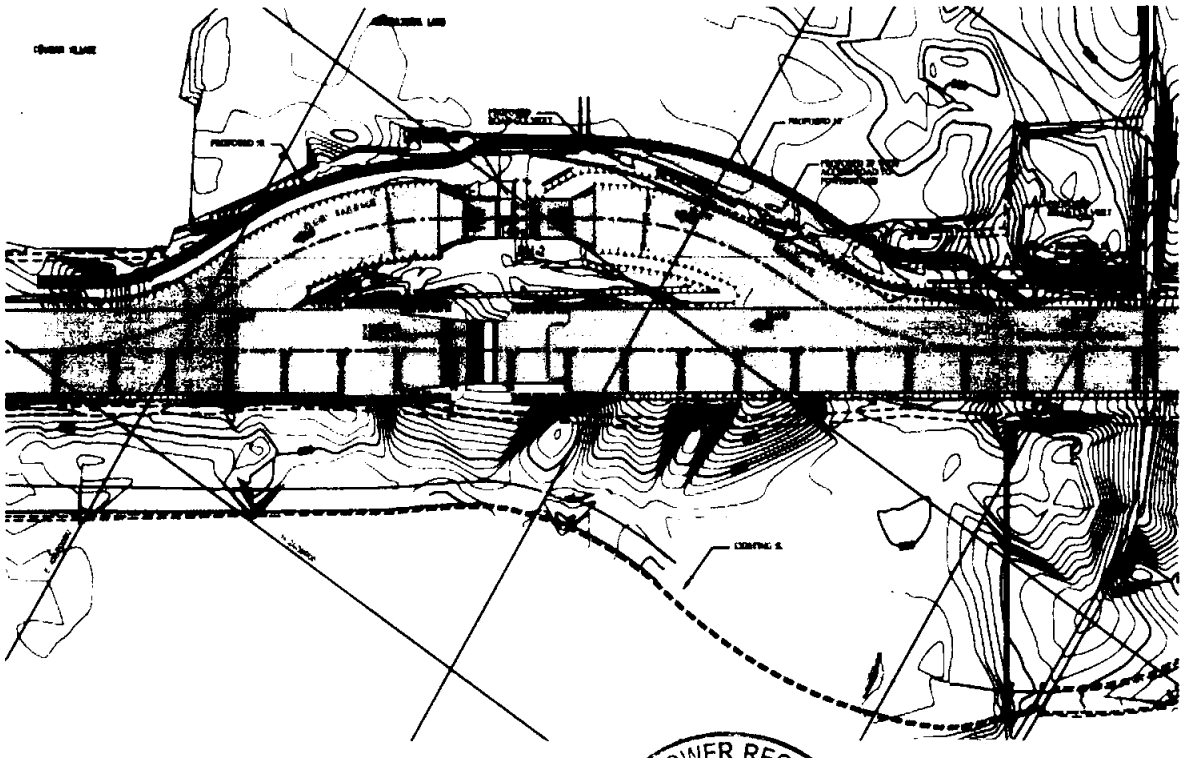
NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

Layout
of the Generation Facility/Hydropower Plant

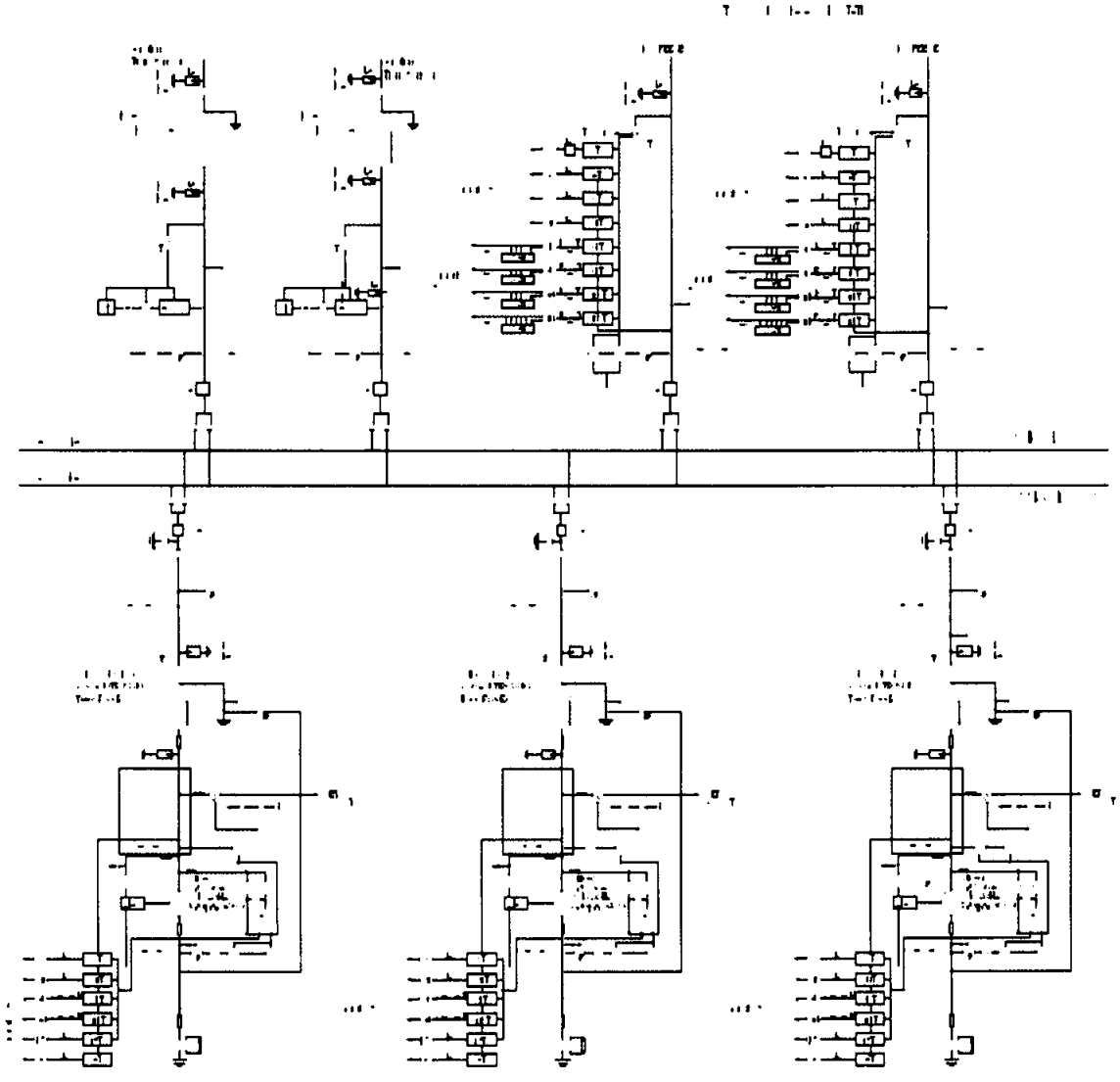


POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA





Single Line Diagram
of the Generation Facility/Hydropower Plant



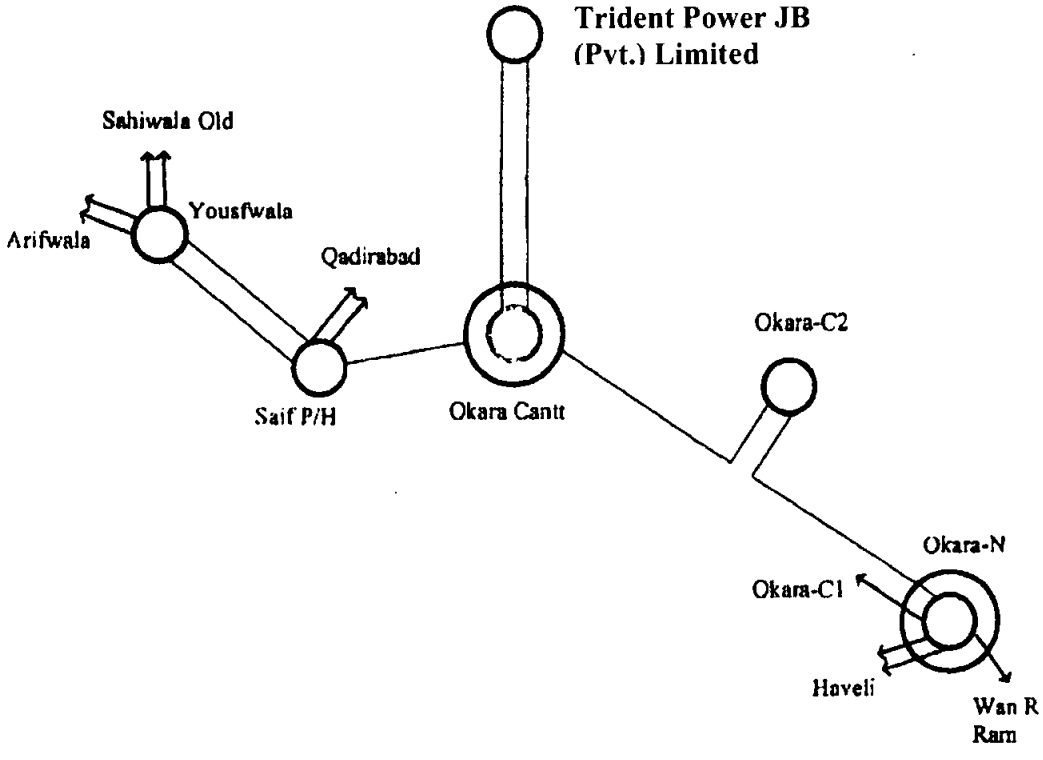
Interconnection/Transmission Scheme for Dispersal of Power from the Generation Facility/Hydropower Plant

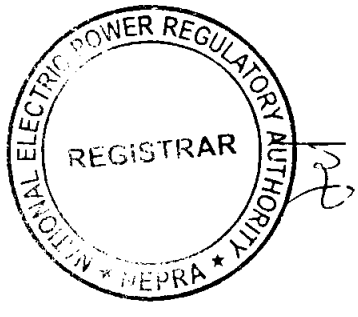
The Power generated by the hydropower plant of Trident Power JB (Private) Limited (TPJBPL) will be dispersed to 132/11KV Okara cant substation of LESCO through 5 KM long 11 KV double circuit transmission line using Osprey conductor.

(2). Any change in the final Interconnection and Transmission Arrangement(s), for the dispersal of power other than the above, as agreed by TPJBPL and LESCO shall be communicated to the Authority in due course of time.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

Schematic Diagram for Interconnection/Transmission Arrangement for Dispersal of Power from the Generation Facility/Hydropower Plant





Details of the Generation Facility/Hydropower Plant of TPJBPL

(A). General Information

(i).	Name of the Licensee/ Company	Trident Power JB (Private) Limited
(ii).	Registered Office	Suit# 8, Ground Floor, Evacue Trust Complex, F-5/1, Islamabad
(iii).	Business Office	House# 359 H, Street#4, Phase-V, DHA Lahore
(iv).	Plant Location	On Lower Bari Doab Canal, at (RD 260+000), Okara Cantt. District Okara, in the Province of Punjab
(v).	Type of Generation Facility	Hydropower Plant

(B). Plant Configuration

(i).	Plant Size Installed Capacity (Gross)	4.65 MW
(ii).	Type of Technology	Run of Canal Hydropower Plant
(iii).	Water Source	Lower Bari Doab Canal, District Okara
(iv).	Type of Technology	Horizontal Axis Kaplan Turbines
(v).	Number of Units & Size(MW)	3 x 1.55 MW
(vi).	Turbine Make & Model*	Andritz Hydro, Mavel, HP or Equivalent
(vii).	Power House Type	Surface
(viii).	Expected Commercial Operation Date (COD)	November 15, 2018
(ix).	Expected Life of the Facility from COD	30 Years

* Hydro turbines are designed and manufactured to meet tha specific requirements of each site and are not available off the Shelf as per standard models.

(C). Salient Features of Headrace Channel (RD 260 +000)

(i).	Design Discharge Q	170 Cumecs
(ii).	Gross Head	3.4 meter
(iii).	Net Head	3.1 meter
(iv).	Plant Factor	68.20%
(v).	Headrace Canal (Length)	332 meter
(vi).	Headrace Canal (Width)	61 meter
(vii).	Tailrace Canal (Depth)	3 meter
(viii).	Tailrace Canal (Length)	396 meter
(ix).	Headrace Canal (Width)	61 meter
(x).	Canal Bed Lowering	From RD 260+000 to 287+000

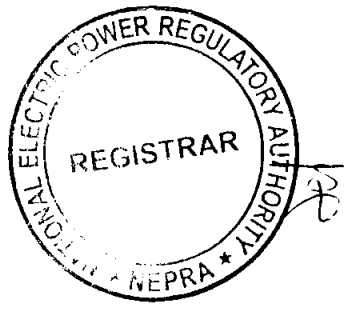
(D). Plant Characteristics

(i).	Generation Voltage	11 KV
(ii).	Frequency	50 Hz
(iii).	Power Factor	0.85
(iv).	Automatic Generation Control	Yes
(v).	Ramping Rate	To be provided later
(vi).	Time required to Synchronize to Grid and loading the Complex to full load.	To be provided later

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

SCHEDULE-II

The Total Installed Gross Capacity (MW), De-Rated Capacity at Reference Site Conditions (MW), Auxiliary Consumption (MW) and the Net Capacity at Reference Site Conditions (MW) of the Generation Facility of Licensee are given in this Schedule



SCHEDULE-II

(1).	Total Installed Gross Capacity of the Generation Facility (3 x 1.55 MW Kaplan Turbine)	4.65 MW
(2).	Total Installed De-Rated Capacity of the Generation Facility at Reference Site Conditions	4.60 MW
(3).	Total Auxiliary Consumption of Generation Facility	0.0460 MW
(4).	Total Installed Net Capacity of Generation Facility at Reference Site Conditions	4.554 MW

Note

All the above figures are indicative as provided by the Licensee. The Net Capacity available to Power Purchaser for dispatch will be determined through procedure(s) contained in the Energy Purchase Agreement or any other applicable document(s).

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA