



# National Electric Power Regulatory Authority Islamic Republic of Pakistan

NEPRA Tower, Attaturk Avenue (East), G-5/1, Islamabad  
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Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

**Registrar**

No. NEPRA/R/DL/LAG-338/ 249-57

January 05, 2017

Mr. MengDonghai,  
Chief Executive Officer,  
Thar Coal Block-1 Power Generation Company (Pvt.) Limited,  
House No. 20/1, 21<sup>st</sup> Street, Khayaban-e-Tanzeem, Phase V,  
DHA, Karachi.

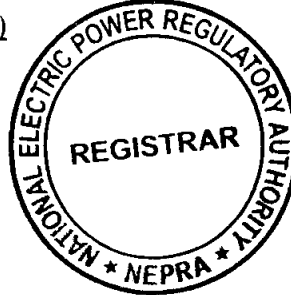
**Subject: Generation Licence No. IGSP/L/74/2017  
Licence Application No. LAG-338  
Thar Coal Block-1 Power Generation Company (Pvt.) Limited (TCBPGCPL)**

*Reference: Your application vide letter No. Nil, dated March 08, 2016, received on March 11, 2016.*

Enclosed please find herewith Generation Licence No. IGSP/L/74/2017 granted by National Electric Power Regulatory Authority (NEPRA) to Thar Coal Block-1 Power Generation Company (Pvt.) Limited, for its 1320.00 MW Indigenous/Thar Coal based Thermal Generation facility located at Thar Coal Block-1, District Thar, in the province of Sindh, pursuant to Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XI. 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 (IGSP/L/74/2017)**



05.01.17  
(Syed Safer Hussain)

Copy to:

1. Secretary, Ministry of Water and Power, A-Block, Pak Secretariat, Islamabad.
2. Chief Executive Officer, Hyderabad Electric Supply Company Limited (HESCO), Old State Bank Building, G.O.R Colony, Hyderabad.
3. Chief Executive Officer, Sukkur Electric Supply Company (SEPCO), Old Thermal Power Station, Sukkur.
4. Chief Executive Officer, NTDC, 414-WAPDA House, Lahore.
5. Managing Director, Private Power and Infrastructure Board (PPIB), Ground & Second Floors, Plot No. 10, Mauve Area, Sector G-8/1, Islamabad.
6. Chief Executive Officer, Central Power Purchasing Agency Guarantee Limited (CPPAG), 6th Floor, Shaheed-e-Millat Secretariat, Jinnah Avenue, Blue Area, Islamabad.
7. Director General, Environment and Alternative Energy Department, Government of Sindh, Plot No 51/2/1, Sector 11, DHA-II Industrial Area, Karachi.
8. Chief Secretary, Government of Sindh, G-11, Sector 11, DHA-II, Karachi.

**National Electric Power Regulatory Authority**  
**(NEPRA)**

**Determination of the Authority**  
**in the Matter of Application of Thar Coal Block-1 Power**  
**Generation Company (Private) Limited for the Grant of**  
**Generation Licence**

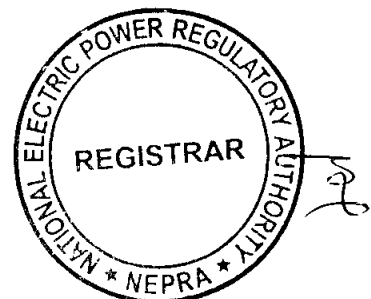
**December 29, 2016**  
**Case No. LAG-338**

**(A). Background**

(i). The electric power sector of the country is experiencing a supply-demand gap. In order to bridge the said deficit and improve the energy mix, Government of Pakistan has decided to install generation facilities/thermal power plants based on indigenous as well as imported coal. All efforts are being made to set up generation facilities using cheaper resources. The efforts include projects by the federal as well as provincial governments.

(ii). In order to implement the abovementioned initiative, Government of Pakistan has set up Private Power Infrastructure Board (PPIB) as a one window facilitator for the entrepreneurs interested in setting up new generation facilities. PPIB has issued Letter of Intent (LoI) to various local and foreign investors/groups. PPIB also issued LOI to Shanghai Electric Group Company Limited (SEGCL) for setting up an approximately 1320 MW supercritical indigenous coal fired generation facility/thermal power plant at Thar Coal Block-1, District Thar in the Province of Sindh.

(iii). In order to implement the project, the sponsors of the project incorporated a Special Purpose Vehicle (SPV) in the name of Thar Coal Block-1 Power Generation Company (Private) Limited (TCBPGCPL)

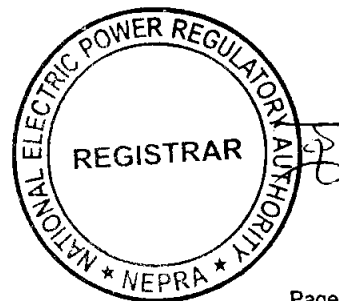


## **(B). Filing of Generation Licence Application**

(i). In accordance with Section-15 of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 ("the NEPRA Act"), TCBPGCPL submitted an application on March 11, 2016 requesting for the grant of generation licence.

(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 TCBPGCPL for providing the missing information/documents etc. TCBPGCPL submitted the required information/documentation on April 07, 2016. Accordingly, the Registrar submitted the case to the Authority for consideration regarding admission of the application or otherwise. The Authority considered the matter in its Regulatory Meeting (RM 16-313), held on May 11, 2016 and found the form and content of the application in substantial compliance with Regulation-3 of the Licensing Regulations. Accordingly, the Authority admitted the application for 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 about the admission of the application of TCBPGCPL, to invite the general public to submit their comments in the matter as stipulated in Regulation-8 of the Licensing Regulations. The Authority also approved the list of relevant stakeholders to provide their comments in the matter for assistance of the Authority.

(iii). Accordingly, the advertisement was published in one Urdu ("daily Jang") and one English ("the DAWN") newspapers on May 17-18, 2016, respectively. Apart from the above, separate letters were also sent to government ministries, their attached departments, representative organizations and individual experts etc. on May 19, 2016. The said stakeholders were directed to submit their views/comments for the assistance of the Authority.

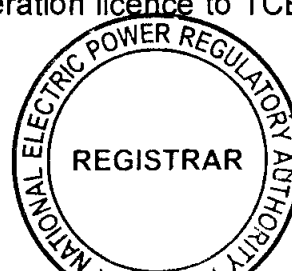


### **(C). Comments of Stakeholders**

(i). In reply to the above, the Authority received comments from three (03) stakeholders, which included Ministry of Petroleum and Natural Resources, Board of Investment and Ministry of Water & Power. A summary of the comments provided by the above stakeholders is as under:-

- (a). Ministry of Petroleum and Natural Resources expressed its no objection for the proposed coal power project as it will not require any allocation of natural gas;
- (b). Board of Investment in its comments stated that energy sector is priority of the Government of Pakistan to cater the short fall in the country. Being an investment promoting and facilitating agency, Board of Investment has also been making efforts to attract investment in the said sector. Board of Investment 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 of the said, proposal of TCBPGCPL for grant of generation license is supported subject to consumer friendly/competitive tariff and completion of all codal/technical formalities under rules & regulations;
- (c). Ministry of Water & Power submitted that this project is critical part of generation development in Pakistan and on fast track basis for implementation and the Ministry supports the proposal. Further, Ministry of Water & Power stated that the Authority may process the application as per provisions of the NEPRA Act and GOP guidelines. Ministry of Water & Power stressed that Thar coal resources are critical for future energy security of the country.

(ii). The above comments of the stakeholders were examined and the same were found supportive for the grant of generation licence to TCBPGCPL.



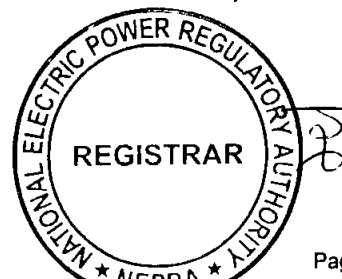
Accordingly, the Authority considered it appropriate to process the application of TCBPGCPL for the consideration of the grant of generation licence as stipulated in the Regulations and NEPRA Licensing (Generation) Rules, 2000 ("the Generation Rules").

**(D). Analysis of the Authority**

(i). The Authority has examined the generation licence application of TCBPGCPL along with information provided with the generation licence application including feasibility study of the project, environment impact assessment study, interconnection and dispersal arrangement studies and relevant rules & regulations.

(ii). The applicant company (i.e. TCBPGCPL) is a private limited company (having Corporate Universal Identification No. 0097511, dated January 28, 2016) under Section-32 of the Companies Ordinance, 1984 (XLVII of 1984). The Registered Office of the company is located at House No. 20/1, 21<sup>st</sup> Street, Khayaban-e-Tanzeem, Phase V, D.H.A, Karachi. The Memorandum of Association of the company, the objects of the company, *interalia*, include electricity generation and its supply thereof. According to the submitted Memorandum of Association of the company, its 99.9997% shares of the company are held by Shanghai Electric Investment (Dubai) Limited, whereas the remaining 0.0003% shares are held by the three individuals namely Meng Donghai, Sha Yunfeng and Song Guohui in equal proportions.

(iii). The Project is located at Thar Coal Block-1, District Thar in the Province of Sindh. The proposed generation facility/thermal power plant will be consisting of 2 x 660MW supercritical units having supercritical variable pressure operation coal fired tower type boiler with single furnace, extraction condensing steam turbine and inner-cooled generator. The boiler will be fueled by indigenous lignite of Thar Block-1. Supercritical technology is very mature with many units in commercial operation for many years with good records. The selected main parameters of the steam turbine and boiler of the project (600°C and 270 bar) are at the high end of the supercritical class and produce high

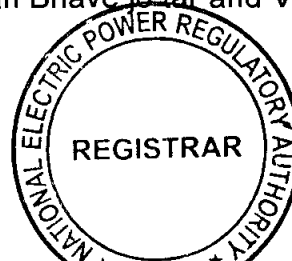


thermal efficiency that results in less emission per unit of electricity generated. The modern emission control system will make the technology environmentally friendly. The high efficiency of the selected system and the low cost of coal fuel will generate the lowest cost power and make an economically feasible solution to relieve power shortages in Pakistan. The gross efficiency of the proposed generation facility/thermal power plant will be 42.39% whereas the Net Efficiency of the same will be 39%.

(iv). Regarding system studies of the project, the Authority has observed that TCBPGCPL has submitted Load Flow and Short Circuit Studies of the project, which has been carried out by Planning Department of NTDC. According to the submitted system studies, the electric power generated by the proposed generation facility of TCBPGCPL will be dispersed to the National Grid at 500 KV Voltage Level. The Interconnection/Dispersion Arrangement will be consisting of a 500 kV Double Circuit transmission line, approximately 15 km long, on Quad-bundled Greeley Conductor for making In/Out of already planned Engro CFPP Matiari Single Circuit at the switchyard of 2x660 MW thermal power plant of TCBPGCPL; Further, TCBPGCPL has also submitted consent from Central Power Purchasing Agency (Guarantee) Limited (CCP-G), wherein CPPA-G has confirmed that it will purchase power generated by the 2x660 MW project of TCBPGCPL.

(v). The proposed power plant of TCBPGCPL is based on indigenous coal. The coal based generation facilities may be harmful to environment because of emission of greenhouse gases and production of ash and other effluents. In this regard, the sponsors have confirmed that the proposed generation facility will comply with the environmental standards of the country. Further, TCBPGCPL has carried out an Environmental Impact Assessment study and has also provided a copy of the No Objection Certificate (NOC) issued by Environmental Protection Agency, Government of Sindh.

(vi). Regarding land of the project, the Authority has observed that office of the District Collector, Tharparkar Government of the Sindh has allotted about 621 acres of land to TCBPGCPL in Makaan Bhav in Jar and Varval, Deh

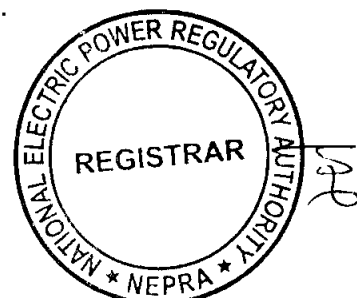


Khuiyo Ghulam Shah, Taluka Islamakot, District Tharparkar. The said land has been allocated for establishment of indigenous coal based thermal power plant and its ash yard.

(vii). The Authority is of the considered opinion that project of TCBPGCPL fulfills the least cost option criteria as envisaged in the Rule-3(5) of the Generation Rules including (a). sustainable development or optimum utilization of the renewable or non-renewable energy resources proposed for generation of electric power; (b). the availability of indigenous fuel and other resources; (c). the comparative costs of the construction, operation and maintenance of the proposed generation facility against the preferences indicated by the Authority as the project has accepted the upfront tariff determined by the Authority for coal power projects; (d). the costs and rights-of-way considerations related to the provision of transmission and interconnection facilities; (e). the constraints on the transmission system likely to result from the proposed generation facility and the costs of the transmission system expansion required to remove such constraints; (f). the short-term and the long-term forecasts for additional capacity requirements; (g). the tariffs resulting or likely to result from the construction or operation of the proposed generation facility; and (h). the optimum utilization of various sites in the context of both the short-term and the long-term requirements of the electric power industry as a whole

#### **(E). Grant of Generation Licence**

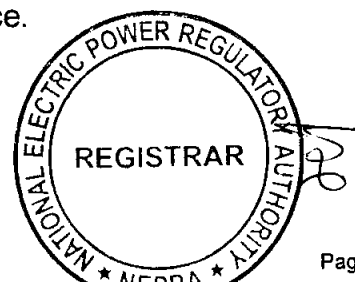
(i). Sustainable and affordable electric power is a key and lifeline for the socio-economic development of any country. In fact, the economic growth of any country is directly linked with the availability of safe, secure, reliable and cheaper supply of electricity. The electricity consumption per capita has a strong correlation to the Social Development Indices (Human Development Index-HDI, life expectancy at birth, infant mortality rate, and maternal mortality) and Economic Indices (such as GDP per capita etc.).



(ii). Increasing electricity consumption per capita can directly stimulate faster economic growth and indirectly achieve enhanced social development. In short, the economic growth of any country is directly linked with the availability of safe, secure, reliable and cheaper supply of electricity. In view of the said, the Authority is of the considered opinion that for sustainable development, all types of electric power generation resources including coal, hydel, wind, solar and other Renewable Energy (RE) resources must be tapped and developed on priority basis both in Public and Private Sectors.

(iii). The current energy mix of the country is skewed towards the costlier thermal generation facilities/power plants operating on Furnace Oil. The Import of relatively expensive furnace oil results in depletion of the precious foreign exchange reserves of the country affecting the macro and micro stability of the country. In view of the said, an increase in the consumer end tariff is experienced which not only results in higher inflation but it also affects the competitiveness of the local Industry with its foreign peers. In order to address the said issues, the Authority considers it imperative that efforts must be made to change the energy mix towards cheaper fuels. With the depleting natural gas reserves in the country and relatively longer lead time for the construction of hydro electric power projects, the coal power plants are considered to be the best option in the short and medium term planning. Therefore, to reduce the demand-supply gap and to achieve sustainable development, it is vital that coal projects are given priority for power generation and their development is encouraged. In view of the said, the Council of Common Interests (CCI) approved the Power Policy 2015 which envisages rationalizing the energy mix and reducing the demand-supply gap through imported and indigenous coal based power generation. In consideration of the said, the Authority is of the view that the proposed project of TCBPGCPL is consistent with the provisions of Power Policy 2015.

(iv). The Authority has observed that a part of the system studies of the project namely System Stability & Reliability Study has not been submitted. In this regard, the Authority directs TCBPGCPL to submit the same within two (02) months of the grant of the generation licence.

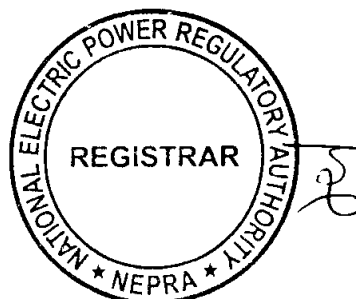




(v). The term of a Generation Licence under the Rule-5 (1) of the Generation Rules, is to be commensurate with the maximum expected useful life of the units comprised in a generating facility. As explained above, the proposed generation facility of TCBPGCPL will be consisting of two (02) steam turbine units of 660.00 MW each. According to the International benchmarks available, the useful life of a steam turbine is normally taken at least thirty (30) years from its Commercial Operation Date (COD). Further, TCBPGCPL has also confirmed that it will be negotiating a Power Purchase Agreement (PPA) with the Power Purchaser having a term of thirty (30) years. In view of the said, the Authority hereby fixes the term of the proposed Generation Licence of TCBPGCPL as thirty (30) years from COD of the project.

(vi). Regarding Tariff that the company will charge from the Power Purchaser, it is clarified that under Section-7(3)(a) of the NEPRA Act, determination of tariff, rate and charges etc. is the sole prerogative of the Authority. In this regard, the Authority through its determination No. NEPRA/TRF-360/TCB-1-2016/8694-8696 dated June 10, 2016 has granted an up-front tariff to TCBPGCPL for its project. The Authority directs TCBPGCPL to follow the terms and conditions of the granted up-front tariff in letter and spirit and charge the power purchaser only such tariff which has been determined, approved or specified by the Authority in terms of Rule-6 of the Generation Rules.

(vii). Regarding compliance with the environmental standards, the Authority directs TCBPGCPL 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 TCBPGCPL to submit a report on a bi-annual basis, confirming that operation of its generation facility/thermal power plant is compliant with required environmental standards as prescribed by the concerned environmental protection agency.

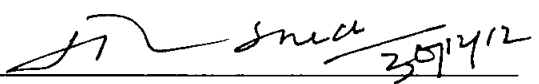


(viii). Regarding land of the project as mentioned in the Schedule-I of the generation licence, the Authority directs TCBPGCPL that the same shall be exclusively used by TCBPGCPL for the proposed coal power plant and TCBPGCPL cannot carry out any other generation activity on this land except with prior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


(ix). In view of the above, the Authority hereby approves the grant of generation licence to TCBPGCPL 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 the other applicable documents.

**Authority:**

Maj. (R) Haroon Rashid  
(Member)

  
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Syed Masood-ul-Hassan Naqvi  
(Member)

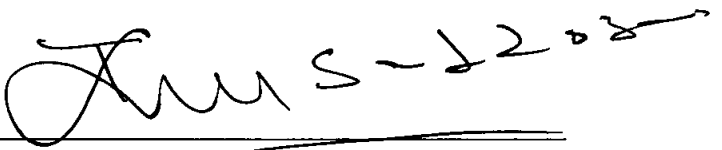
  
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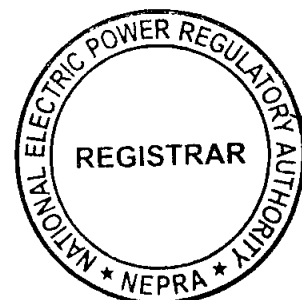
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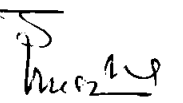
Himayat Ullah Khan  
(Member/Vice Chairman)

\_\_\_\_\_

Tariq Saddozai  
(Chairman)

  
\_\_\_\_\_



  
05.01.17

**National Electric Power Regulatory Authority  
(NEPRA)  
Islamabad – Pakistan**

**GENERATION LICENCE**

**No. IGSPL/74/2017**

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:

**THAR COAL BLOCK-1 POWER GENERATION COMPANY  
(PRIVATE) LIMITED**

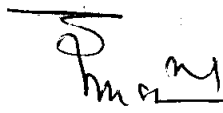
Incorporated Under Section-32  
of the Companies Ordinance, 1984 (XL VII of 1984) Having Corporate  
Universal Identification No. 0097511, Dated January 28, 2016

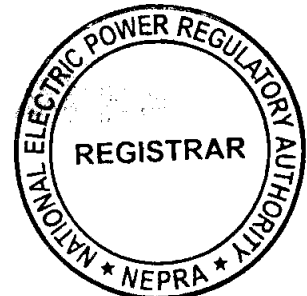
for its Indigenous/Thar Coal Based Thermal Generation Facility Located at  
Thar Coal Block-1, District Thar, in the Province of Sindh

(Installed Capacity: 1320.00 MW Gross)

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

Given under my hand on 05<sup>th</sup> day of January Two  
Thousand & Seventeen and expires on 30<sup>th</sup> day of  
December Two Thousand & Fifty.

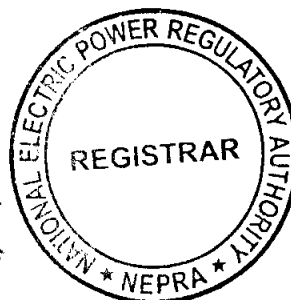
  
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Registrar



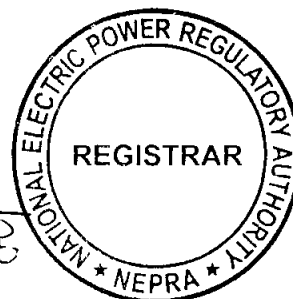
**Article-1**  
**Definitions**

**1.1 In this Licence**

- (a). "Act" means "the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997";
- (b). "Applicable Documents" 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). "CPPA-G" means "the Central Power Purchasing Agency (Guarantee) Limited" or any other entity created for the like purpose;
- (g). "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 any necessary approval by the Authority;
- (h). "Grid System" means the transmission facilities owned by the Power Purchaser, other than the Interconnection Facilities of the Licensee through which the net electric power output will be received and distributed by the Power Purchaser;



- (i). "IEC" means International Electrotechnical Commission or any other entity created for the like purpose and its successors or permitted assigns;
- (j). "IEEE" means the Institute of Electrical and Electronics Engineers and its successors or permitted assigns;
- (k). "Interconnection Point" the physical point or points where the generation facility and the Grid System are to be connected;
- (l). "Law" means the Act, relevant rules and regulations made there under and all the Applicable Documents;
- (m). "Licensee" means **"THAR COAL BLOCK-1 POWER GENERATION COMPANY (PRIVATE) LIMITED"** and its successors or permitted assigns;
- (n). "NTDC" means National Transmission and Despatch Company Limited and its successors or permitted assigns;
- (o). "Power Purchase Agreement" means the power 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;
- (p). "Power Purchaser" means the CPPA-G purchasing power on behalf of XW-DISCOs from the Licensee, pursuant to Power Purchase Agreement;
- (q). "Regulations" mean "the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 as amended or replaced from time to time";



- (r). "Rules" mean "the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000";
- (s). "XW DISCO" means "an Ex-WAPDA distribution company engaged in the distribution of electric power".

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 Law, as amended from time to time.

## **Article-3** **Generation Facilities**

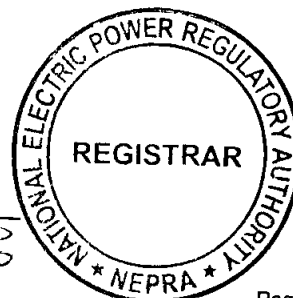
3.1 The location, size (capacity in MW), technology, interconnection arrangements, technical limits, technical and functional specifications and other details specific to the generation facility of the Licensee are set out in Schedule-I of this Licence.

3.2 The net capacity of the generation facility 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.



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 the Licence fee, in the amount and 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.

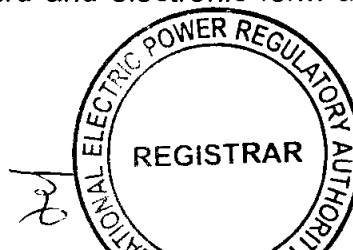
**Article-7**  
**Competitive Trading Arrangement**

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 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.

**Article-10**  
**Compliance with Environmental Standards**

10.1 The Licensee at all times shall comply with the environmental standards as may be prescribed by the relevant competent authority as amended 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.

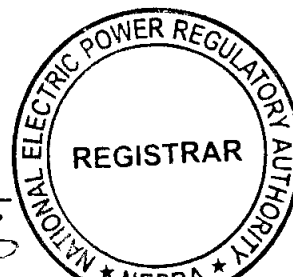
**Article-11**  
**Power off take Point and Voltage**

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 voltage level for Interconnection Point 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

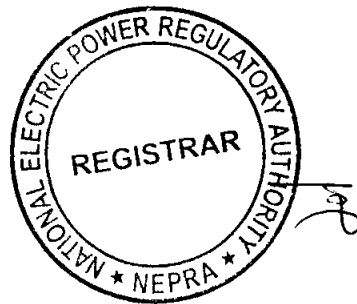




be required from time to time by the Authority and which is or ought to be or has been in the control or possession of the Licensee.

**Article-13**  
**Design & Manufacturing Standards**

All the components of the generation facility/power plant shall be designed, manufactured and tested according to the latest IEC, IEEE or any other equivalent standards. All plant and equipment shall be unused and brand new.



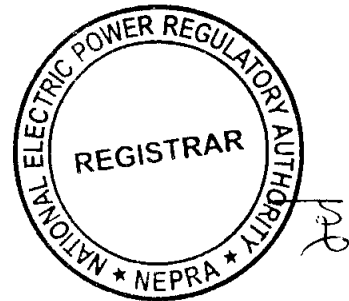
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## **SCHEDULE-I**

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 Facilities of the Licensee are described in this Schedule

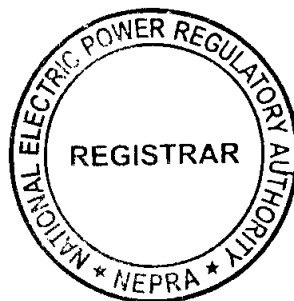
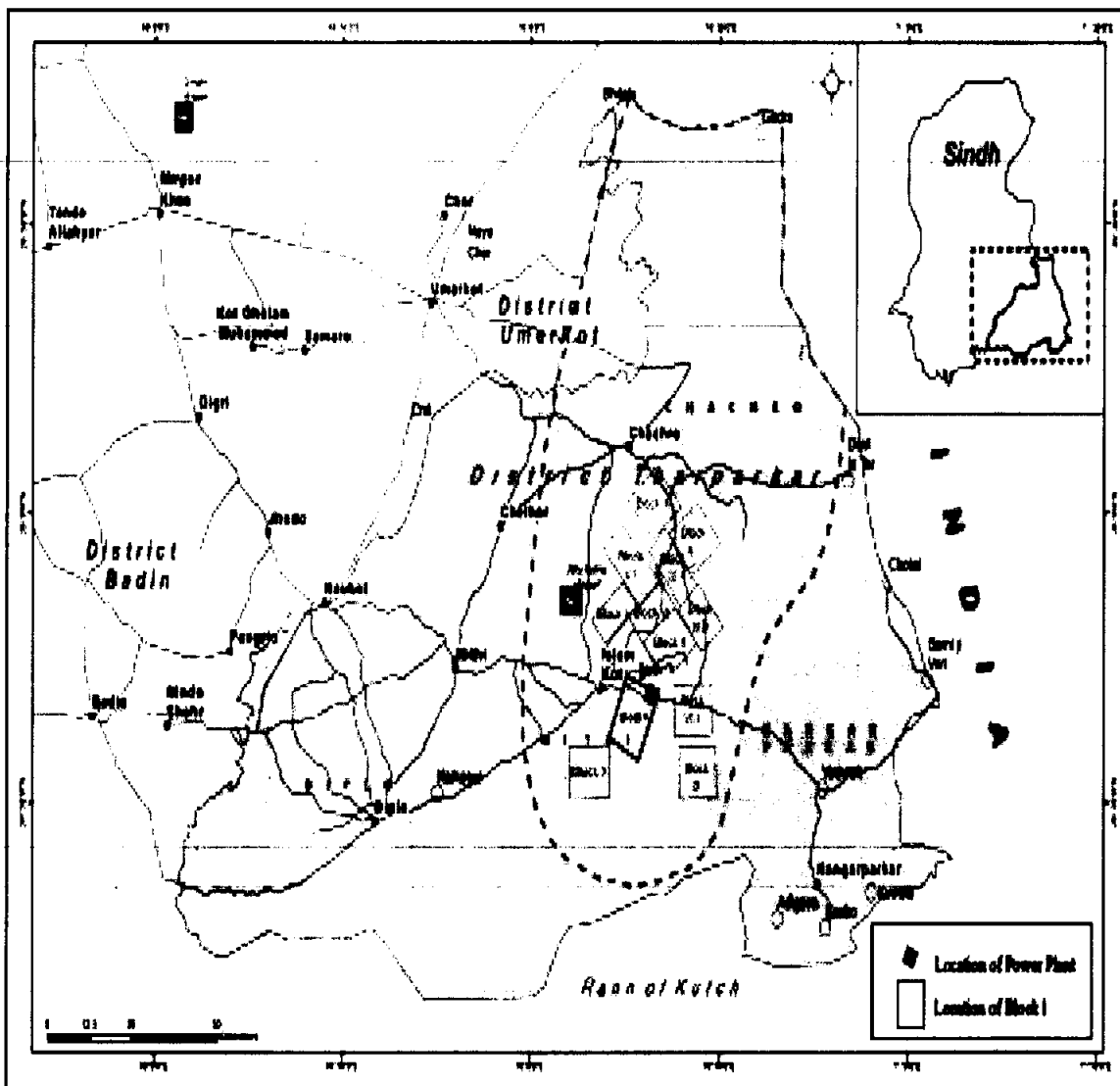


Handwritten mark resembling a stylized 'M' or 'W' with a horizontal line below it.

Handwritten mark resembling a stylized 'A' with a horizontal line above it.

Handwritten mark resembling a stylized 'Z' or '2'.

## Location of the Generation Facility/Thermal Power Plant



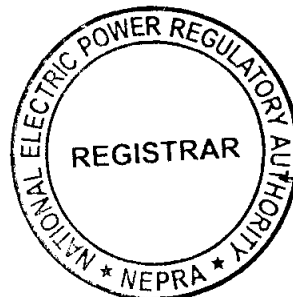
**Land**  
**of the Generation Facility/Thermal Power Plant**



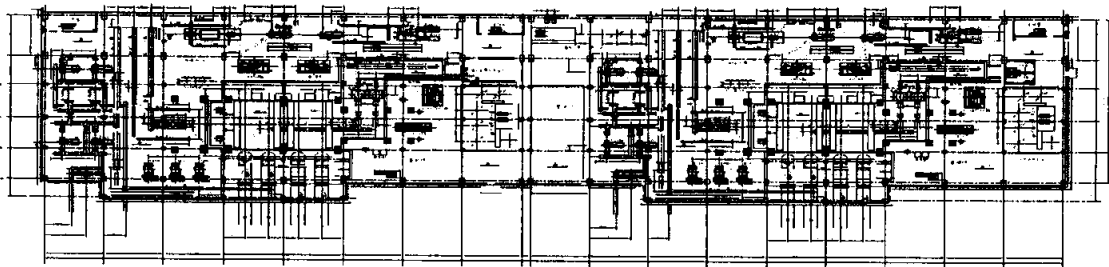
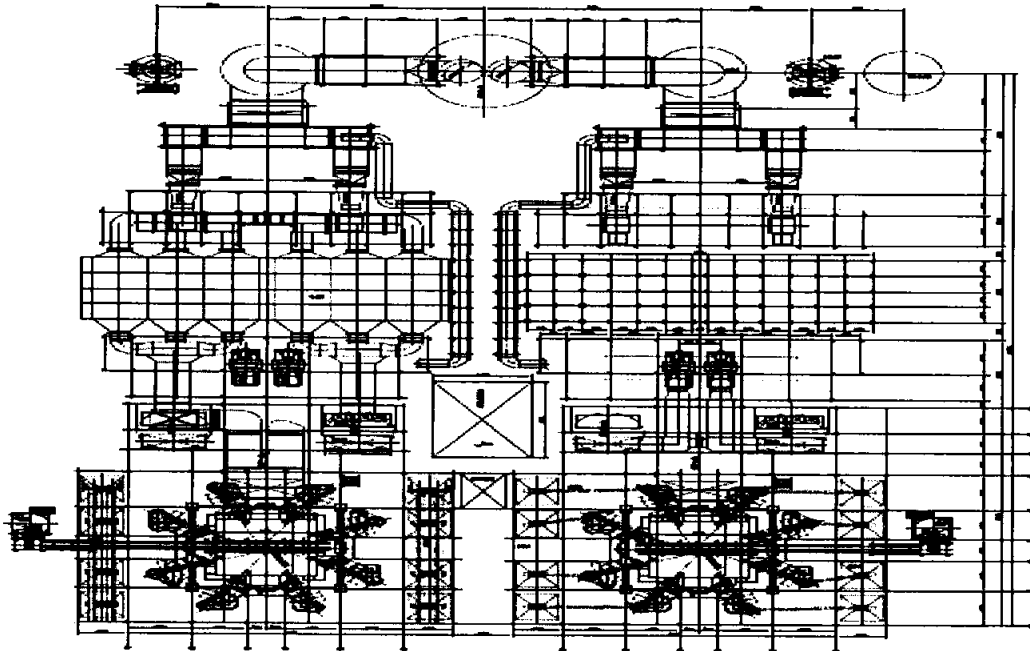
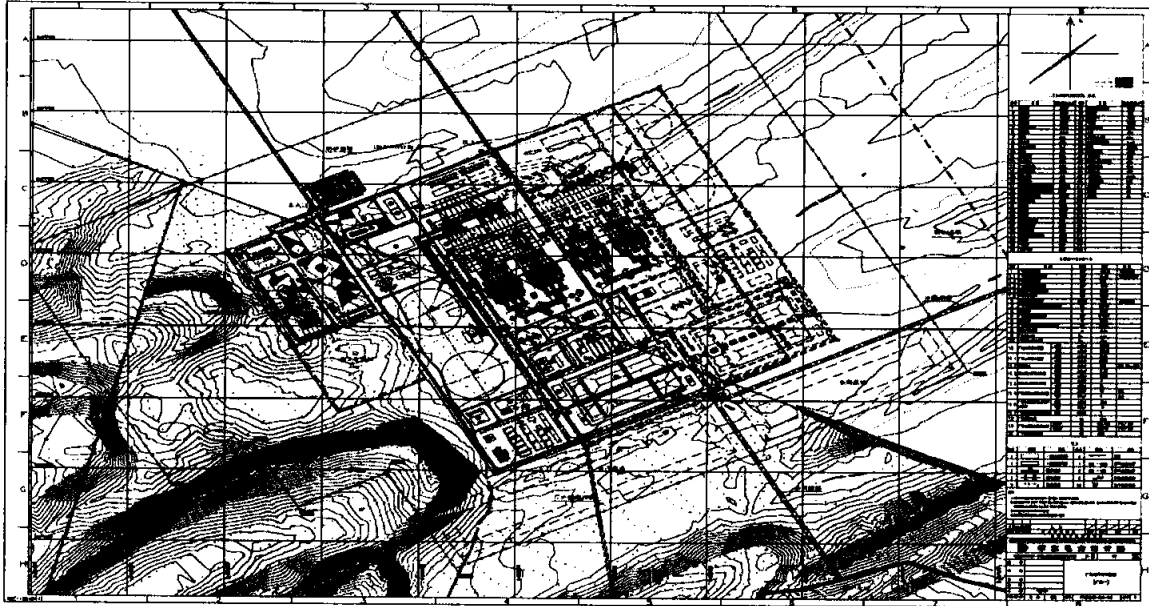
**Land Coordinates (NE)**


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Handwritten marks and scribbles.



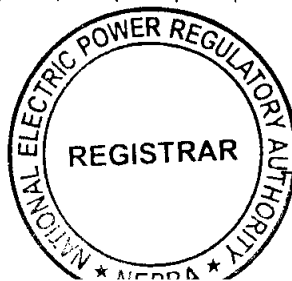
## Layout of the Generation Facility/Thermal Power Plant



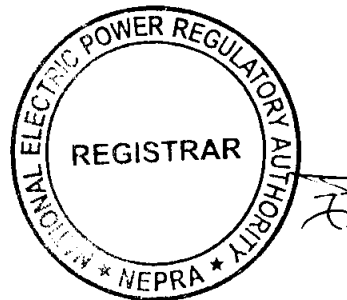
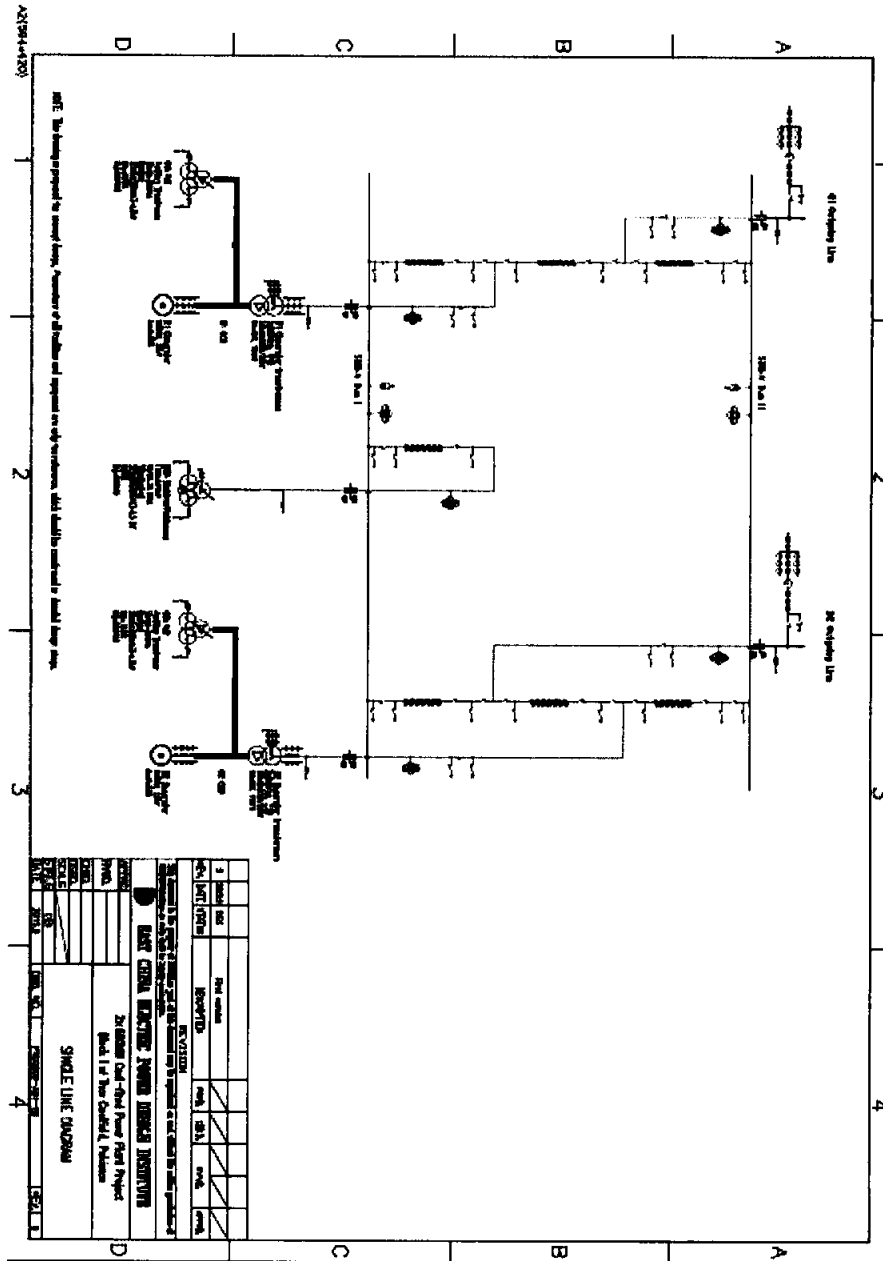
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## Single Line Diagram of the Generation Facility/Thermal Power Plant

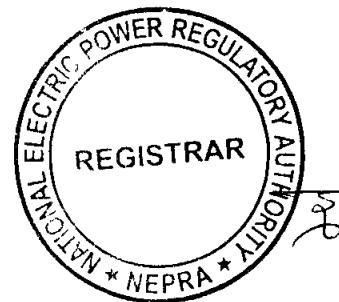


**Interconnection Facilities/  
Transmission Arrangements for Dispersal of Power from  
the Generation Facility/ Thermal Power Plant**

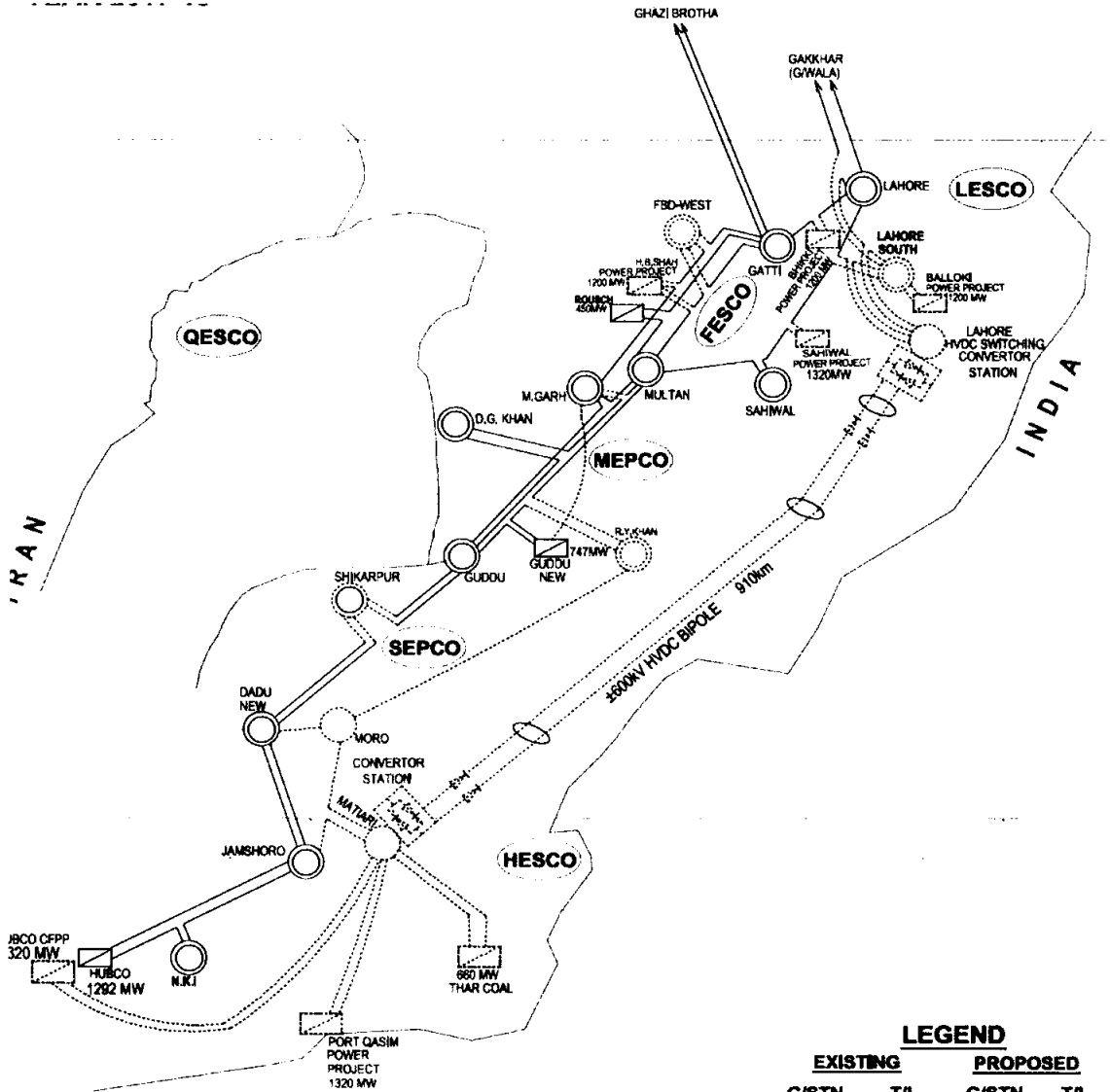
The electric power from the Coal based generation facility of Thar Coal Block-1 Power Generation Company (Private) Limited (TCBPGCPL) will be dispersed to the National Grid.

(2). The Interconnection Facilities (IF)/Transmission Arrangement (TA) for supplying to National Grid from the above mentioned generation facility shall be at 500 kV level. The Interconnection/Dispersal Arrangement will be consisting of a 500 kV Double Circuit transmission line, approximately 15 km long, on Quad-bundled Greeley Conductor for making In/Out of already planned Engro coal fired thermal power plant-Matiari Single Circuit at the switchyard of 2x660 MW thermal power plant of TCBPGCPL.

(3). Any change in the above mentioned IF A for dispersal of electric power as agreed by the Licensee and the Power Purchaser shall be communicated to the Authority in due course of time.

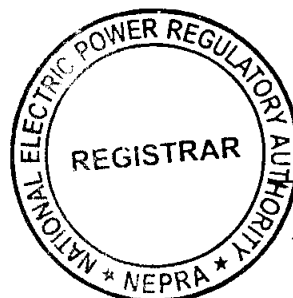


## Schematic Diagram of Interconnection Arrangement for Dispersal of Power from the Generation Facility/ Thermal Power Plant



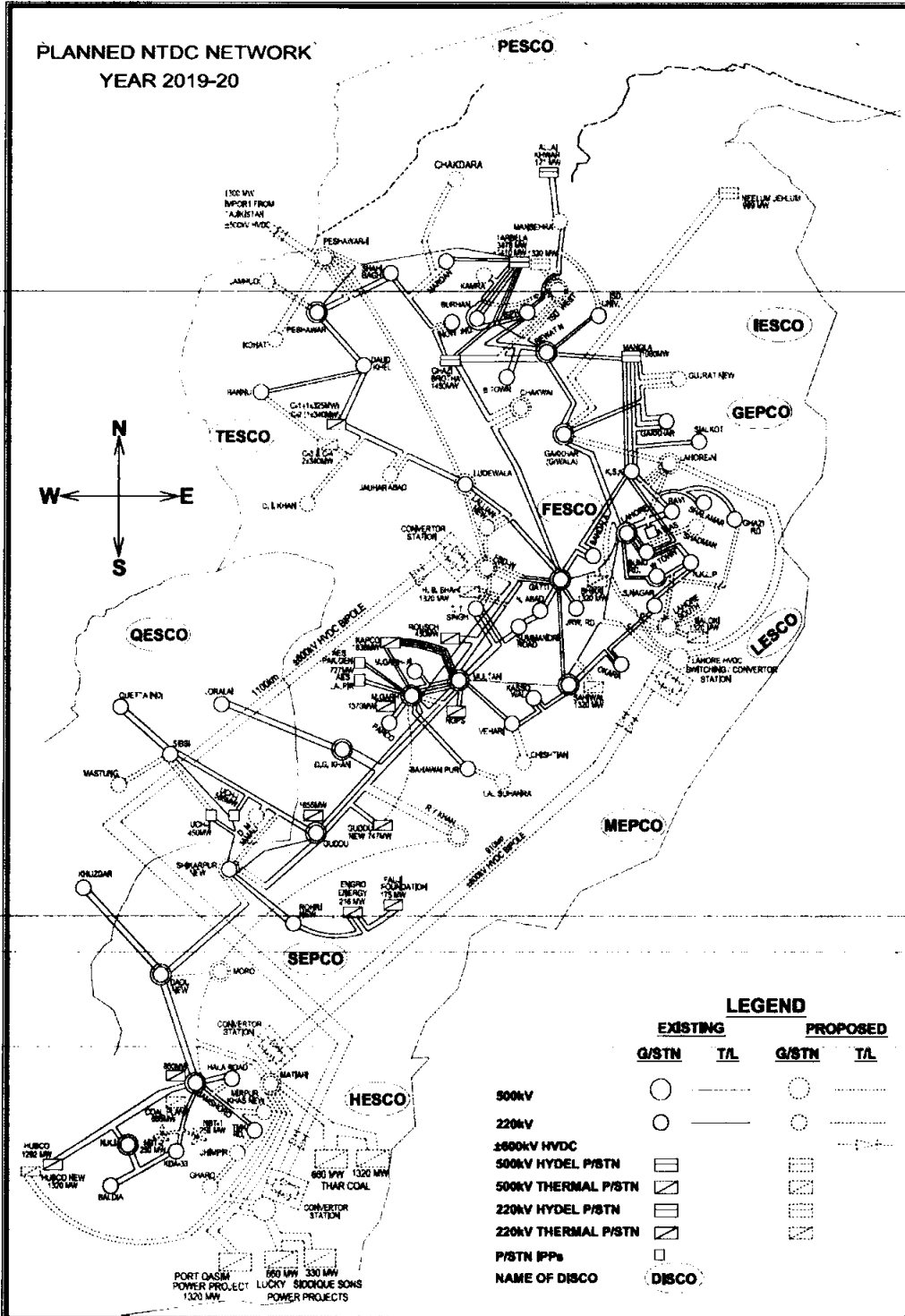
### LEGEND

	EXISTING		PROPOSED	
	G/STN	T/L	G/STN	T/L
500kV				
220kV				
±500kV HVDC				
±600kV HVDC				
500kV HYDEL P/STN				
500kV THERMAL P/STN				

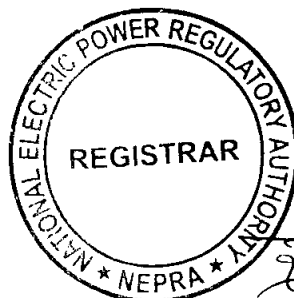


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 2/3





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 22



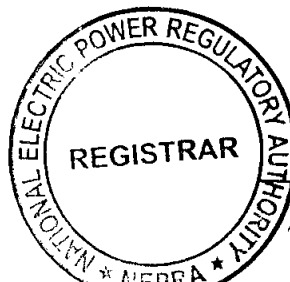
## Details Of the Generation Facility/ Thermal Power Plant

### (A). General Information

(i).	Name of Company/Licensee	Thar Coal Block-1 Power Generation Company (Private) Limited
(ii).	Registered /Business Office	10 <sup>th</sup> Floor, Ocean Tower, Block-9, Main Clifton Road, Karachi
(iii).	Location of the Generation Facility	Thar Coal Block-I, Tehsil Mithi, District Tharparkar, Sindh Province
(iv).	Type of Generation Facility	Mine Mouth Lignite fired power generation

### (B). Plant Configuration

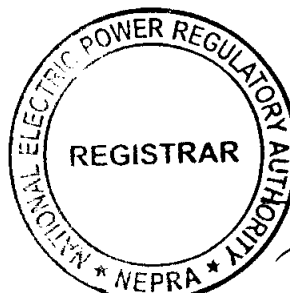
(i).	Installed Capacity/ Plant Size of the Generation Facility	1320.00 MW	
(ii).	Type of Technology	High parameter supercritical tower-type boiler	
(iii).	Number of Units/Size (MW)	2 x 660.00 MW	
(iv).	Unit Make/Model/Type & Year of Manufacture Etc.	Boiler	High parameter supercritical variable pressure operation coal fired concurrent boiler, tower-type boiler with single furnace, once reheat and balanced draft
		Steam turbine	High parameter supercritical, once-reheat, tandem, four-casing, four-flow condensing steam turbine. (660 MW, 27 MPa, 600°C,) STP Make & Model: N660-27/600/600
		Generator	660 MW, an inner-cooled generator with rotor and stator core cooled by hydrogen and stator winding cooled by water. SGP Make & Model: QFSN-660-2



(v).	COD of the Generation Facility (Expected)	December 31, 2020
(vi).	Expected Useful Life of the Generation Facility from COD	30 years

**(C). Fuel/Raw Material Details**

(i).	Primary Fuel	Thar Block-I Lignite	
(ii).	Start-Up Fuel	Light Fuel Oil (LFO)	
(iii).	Fuel Source for each of the above	Primary Fuel	Start-Up
		Lignite/Sub-Bituminous Coal from Thar Block-I	Indigenous/Imported
(iv).	Fuel Supplier for each of the above	Primary Fuel	Start-Up
		The main fuel source is indigenous, produced from Thar Block-I lignite mine, owned & operated by Sino Sindh Resources (Private) Limited (SSRL)	Indigenous
(v).	Supply Arrangement for each of the above	Primary Fuel	Start-Up Fuel
		8753613 Ton (Max) per annum via belt conveyer from Thar Block-I Mine	1742 t per annum
(vi).	No. of Storage Bunkers/Tanks/ Open Yard	Primary Fuel	Start-Up Fuel
		One Open stockyard (two parts)	Two Oil tanks
(vii).	Storage Capacity of each Bunkers/	Primary Fuel	Start-Up Fuel



	Tanks/Open Yard	30 days	1000 M <sup>2</sup>
(viii).	Gross Storage	Primary Fuel	Start-Up Fuel
		Approx. 658680 Ton	2000 M <sup>2</sup>

**(D). Emission Values**

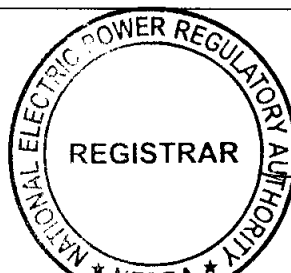
		Primary Fuel	Start-Up Fuel
(i).	SO <sub>x</sub> (mg/Nm <sup>3</sup> )	<400	<400
(ii).	NO <sub>x</sub> (mg/Nm <sup>3</sup> )	<500	<500
(iii).	Particulate Matter (mg/Nm <sup>3</sup> )	<100	-

**(E). Cooling System**

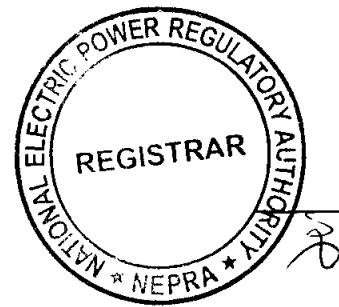
(i).	Cooling Water Source/Cycle	Nara river water from Government of Sindh scheme (primary source) and well water from mine (backup source)/Cycle: Close cycle cooling system, but the air cooling system might be considered if required
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**(F). Plant Characteristics**

(i).	Generation Voltage	22KV
(ii).	Frequency	50Hz
(iii).	Power Factor	0.85 (lagging) /0.95(leading)
(iv).	Automatic Generation Control (AGC) (MW control is the general practice)	Yes

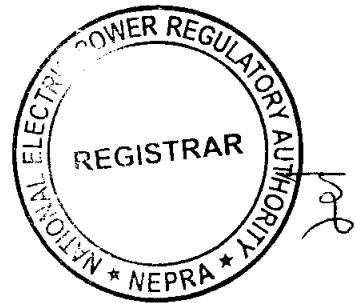


(v).	Ramping Rate (MW/min)	0.5-1% rated load (3.3-6.6MW/Minute). This figure is indicative and will be confirmed after engineering design of the plant
(vi).	Time required to Synchronize to Grid (Hrs.)	5 minutes. This figure is indicative and will be confirmed after engineering design of the plant



## **SCHEDULE-II**

The Installed/ISO Capacity (MW), De-Rated Capacity at Mean Site Conditions (MW), Auxiliary Consumption (MW) and the Net Capacity At Mean Site Conditions (MW) of the Generation Facilities of Licensee are given in this Schedule



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## SCHEDULE-II

(1).	Total Gross Installed Capacity of the Generation Facility	1320.00 MW
(2).	De-rated Capacity of Generation Facility at Reference Site Conditions	1320.00 MW
(3).	Auxiliary Consumption of the Generation Facility	105.60 MW
(4).	Total Installed Net Capacity of Generation Facility at Reference Site Conditions	1214.40 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 power purchase agreement or any other applicable document(s).

