



National Electric Power Regulatory Authority Islamic Republic of Pakistan

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Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

Registrar

No. NEPRA/R/DL/LAG-361/1687-94

February 01, 2017

Mr. Mustafa Bilwani,
Chief Executive Officer,
ThalNova Power Thar (Pvt.) Limited,
Ground Floor, G&T Tower # 18,
Beaumont Road, Civil Lines-10,
Karachi.

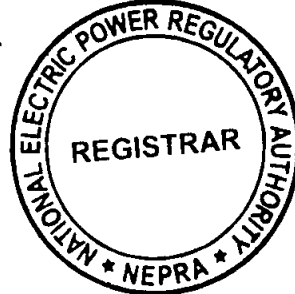
Subject: **Generation Licence No. IGSP/75/2017**
Licence Application No. LAG-361
ThalNova Power Thar (Pvt.) Limited (TNPTPL)

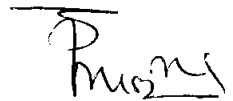
Reference: *Your application vide letter No. TN/01/0012/08-2016, dated August 10, 2016, received on August 11, 2016.*

Enclosed please find herewith Generation Licence No. IGSP/75/2017 granted by National Electric Power Regulatory Authority (NEPRA) to ThalNova Power Thar (Pvt.) Limited (TNPTPL), for its 330.00 MW Indigenous/Thar Coal based Thermal Generation facility located near Islamkot, Thar Coal Block-II, District Tharparker, 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 (IGSP/75/2017)**




01.02.17
(Syed Safer Hussain)

Copy to:

1. Secretary, Ministry of Water and Power, A-Block, Pak Secretariat, Islamabad.
2. The Secretary, Energy Department, Government of Sindh, 3rd Floor, State Life Building No. 03, Opp: CM Secretariat, Karachi
3. Chief Executive Officer, NTDC, 414-WAPDA House, Lahore.
4. Managing Director, Private Power and Infrastructure Board (PPIB), Ground & Second Floors, Plot No. 10, Mauve Area, Sector G-8/1, Islamabad.
5. Chief Executive Officer, Central Power Purchasing Agency Guarantee Limited (CPPAG), 6th Floor, Shaheed-e-Millat Secretariat, Jinnah Avenue, Blue Area, Islamabad.
6. Director General, Environment and Alternative Energy Department, Government of Sindh, Plot No ST/2/1, Sector 23, Korangi Industrial Area, Karachi.
7. Chief Secretary, Government of Sindh, Sindh Secretariat, Karachi.

National Electric Power Regulatory Authority
(NEPRA)

Determination of the Authority
in the Matter of Generation Licence Application of
Thalnova Power Thar (Private) Limited

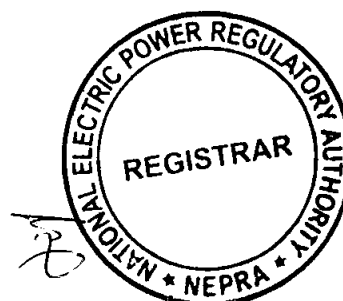
January 24, 2017
Case No. LAG-361

(A). Background

(i). The electric power sector of the country is experiencing a supply-demand gap. In order to bridge the said deficit, 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). The Government of Pakistan (GoP) has set up Private Power and Infrastructure Board (PPIB) as a one window facilitator for the entrepreneurs interested in setting up new generation facilities. In order to meet the electricity/energy needs of the country and to improve the energy mix, the GoP has decided to install generation facilities/thermal power plants mainly operating on indigenous coal. In order to implement the said initiative, PPIB has issued Letter of Intent (LoI) to various local and foreign investors/groups.

(iii). Thal Limited, Novatex Limited and Descon Engineering Limited (collectively the Sponsors) submitted a proposal to Private Power & Infrastructure Board (PPIB) for setting up a 330.00 MW Thar coal based power project at Thar Block-II, District Tharparker, in the Province of Sindh. PPIB found the proposal financially and technically viable and issued a notice to proceed on May 13, 2016 to the sponsors. In order to implement the project, the sponsors incorporated a special purpose vehicle in the name of Thalnova Power Thar (Private) Limited (TNPTPL). PPIB also issued LoI to TNPTPL on August 02, 2016 for setting up a 330.00 MW project.



(B). Filing of Generation Licence Application

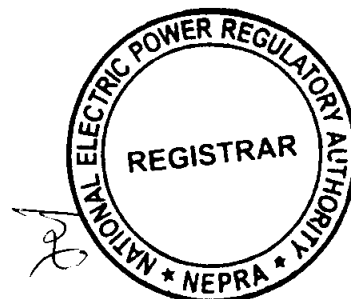
(i). In accordance with Section-15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the NEPRA Act), TNPTPL submitted an application on August 11, 2016 requesting for the grant of generation licence.

(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 in compliance with the Licensing Regulations and submitted the matter before the Authority for admission of the application for grant of generation licence or otherwise.

(iii). The Authority 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 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 TNPTPL, for the purpose of inviting 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 the persons to submit their comments or otherwise to assist the Authority in the matter.

(iv). Accordingly, the advertisement was published in one Urdu and one English national newspaper on September 23, 2016. Apart from the above, separate letters were also sent to government ministries, their attached departments, representative organizations and individual experts on September 26, 2016. The said stakeholders were requested to submit their views/comments for the assistance of the Authority.

(v). Meanwhile, TNPTPL informed that in the notice of admission the total cost of the project was mentioned as US\$ 408.245 million whereas in terms of



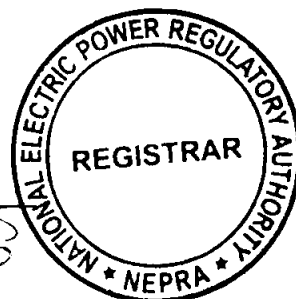
NEPRA determined tariff the cost of the project is US\$ 498.30 millions. In view of the said, TNPTPL requested that the project cost may be corrected and considered as US\$ 498.30 million. The Authority acceded to the request of TNPTPL. Accordingly, an addendum to the notice of admission was published in the press on October 10, 2016 seeking afresh comments of stakeholders.

(C). Comments of Stakeholders

(i). In reply to the above, comments were received from three (03) stakeholders including Energy Department Govt. of Sindh, PPIB and Ministry of Petroleum & Natural Resources. The salient points of the comments offered by the above stakeholder are summarized in the following paragraphs: -

- (a). Energy Department, Govt. of Sindh submitted that TNPTPL intends to install sub-critical circulating fluidized bed boiler with emission control through Electrostatic Precipitator (ESP) 99.9%. Energy Department, Govt. of Sindh supported the grant of generation licence to TNPTPL stating that the project is solely based on indigenous coal that will help in saving of foreign exchange, will ensure energy security of the country and will generate direct and indirect job opportunities in the region;
- (b). Ministry of Petroleum & Natural Resources commented that TNPTPL intends to install coal fired thermal power plant and as such, no gas is required for utilization. Therefore, Ministry of Petroleum and Natural Resources has no objection for the grant of generation licence;
- (c). PPIB in its comments supported the initiative of TNPTPL for investment in the power sector of Pakistan and construction of 330.00MW coal power plant.

(ii). The above comments of the stakeholders were examined and generally found in support of the grant of generation licence to the TNPTPL. In view of the above, it was considered appropriate to process the application of the



TNPTPL for the consideration of the grant of generation licence as stipulated in the Licensing Regulations and NEPRA Licensing (Generation) Rules, 2000 (the Generation Rules).

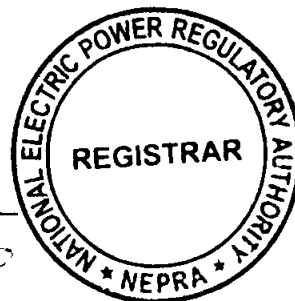
(D). Analysis of the Authority

(i). The Authority has examined the generation licence application of TNPTPL along with information provided with the generation licence application including feasibility study of the project, environment impact assessment study, interconnection and dispersal arrangement studies, relevant rules & regulations and the provisions of the Policy for Power Generation Projects 2015.

(ii). The applicant company (i.e. TNPTPL) is a private limited company (having Universal Incorporation No. 0099023, dated April 18, 2016) under Section 32 of the Companies Ordinance, 1984. The registered/business office of the company is Ground Floor, G&T Tower, #18 Beaumont Road, Civil Lines-10, Karachi. The memorandum of association of the company, inter alia, includes generation of electric power and its supply thereof. According to the submitted memorandum of association of the company, the total number of shares is one thousand and six (1006) of Rs. 10 each. Out of which 500 shares are owned Thal Power (Pvt.) Limited, 500 shares are with Nova Thar Powergen (Pvt.) Limited whereas, the balance six (06) shares are owned by six (06) individuals.

(iii). The project is located at Thar Coal Block-II, District Thar in the Province of Sindh. The proposed 330MW generation facility/thermal power plant will be consisting of a 1 x 330MW subcritical unit having Circulating Fluidized Bed (CFB) Boiler technology and sub-critical steam parameters (i.e. main steam 175 bar and 541 °C, single reheat steam 36 bar and 541°C). The CFB technology is particularly adept at burning low-grade, high-ash coals and co-firing with other low-grade waste materials.

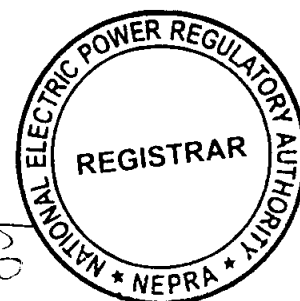
(iv). For operation of the plant, lignite coal will be supplied from the adjacent mine through trucks, which is most feasible and economical option. The trucks will unload the lignite coal at the unloading station which has a capacity of



1000t/h and is sufficient for 330 MW unit. There is also an option of conveyer belt from mine to plant but that can be used later in the regular stage and trucks will be used as a backup option.

(v). The selected main parameters of the steam turbine and boiler of the project (i.e. main steam 175 bar and 541°C) are at the higher end of the subcritical class and produce higher efficiency. The high efficiency of the selected system and the low cost of coal fuel will generate the low cost power and make an economically feasible solution to relieve power shortages in Pakistan. The efficiency of the proposed generation facility/thermal power plant will be more than 37%.

(vi). The Authority has observed that the operation of the proposed coal power plant will generate major waste in the form of ash, waste water and gaseous emission. In this regard, TNPTPL has ensured to adopt adequate measures to cover all these issues. The ash will be stored temporarily on site until it is transported to mine area for final disposal where it will be used as a backfill in the spent mine pit. The dumped ash will be compacted, mixed with sand and given leaching protection. The waste water from the plant will be treated and stored for recycling in the process stream, suppressing coal and ash dust and for landscaping. A sewage treatment plant will treat sewage from the housing complex and construction camp. Waste water from the sewage plant will be discharged or recycled in appropriate processing stream. Non-recycled waste water from the project will be disposed through a 50 cusec drainage and waste water effluent channel being prepared by the Govt. of Sindh. Main gaseous emissions from the plant include sulfur dioxide (SO₂) and nitrogen oxide (NO_x) along with particulate matters emission. For treatment of flue gas, the steam generator is equipped with dry Electrostatic Precipitator (ESP) with efficiency greater than 99.9% and desulfurization efficiency of greater than 90% which is achieved by injection of limestone in the CFB boiler. For NO_x control, low NO_x burner will be used. Further, proper arrangement will be made for disposal of ashes/combustion and FGD residues. Depending upon the emissions limits imposed on the plant, direct injection of limestone into the bed is often sufficient to meet SO₂ removal

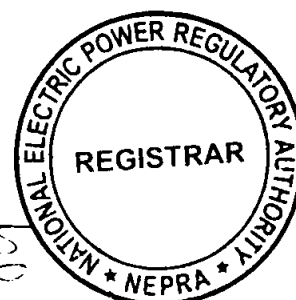


requirements, without the additional desulfurization equipment found on pulverized coal power plants. The emission control system will make the technology environmentally friendly. In this regard, TNPTPL has carried out Environmental and Social Impact Assessment (ESIA) study to ensure compliance with the relevant environment standards and Environmental Protection Agency, Govt. of Sindh (EPA, Sindh) has issued NOC in the matter.

(vii). Regarding system studies of the project, the Authority has observed that TNPTPL has submitted interconnection study of the project, which has been carried out by Planning Department of Power Planners International. According to the said study, the electric power generated by the proposed generation facility of TNPTPL will be evacuated by looping in-out 500 kV circuit between Engro Coal Fired Power Plant and Matiari Converter Station. In this regard, NTDC through its letter dated December 12, 2016 has accorded its approval for the interconnection studies. Further, CPPA-G through its letter dated April 13, 2016 has provided its consent for procuring power from the generation facility of TNPTPL.

(viii). Regarding land of the project, the Authority has observed that Sindh Engro Coal Mining Company has confirmed that it has initially allocated 110 Acres of land to TNPTPL, near Islamkot, Thar Block-II, District Tharparker, in the Province of Sindh. The land has been allocated for establishment of indigenous coal based thermal power plant and coal yard etc.

(ix). The Authority has observed that the least cost option criteria as envisaged in Rule-3(5) of the Generation Rules, includes several factors i.e. (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; (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



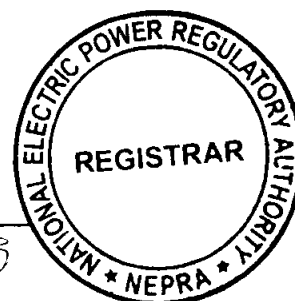
required to remove such constraints; (f). the short-term and the long-term forecasts for additional capacity requirements; (g). the tariffs resulting or likely to result from the construction or operation of the proposed generation facility; and (h). the optimum utilization of various sites in the context of both the short-term and the long-term requirements of the electric power industry as a whole. The Authority considers that the proposed plant of TNPTPL will be helpful for sustainable development as it will be utilizing indigenous coal (cheaper fuel) of Thar block-II, which will result in less per unit cost of electricity to CPPA-G. The plant will be connected to the proposed 500kV system of NTDC which is at a distance of 5-km from it, for which right of way and space at terminal substation would be available. In this regard, NTDC has accorded its approval for the interconnection arrangement, CPPA-G has provided its consent for procuring power from TNPTPL and EPA, Sindh has issued NOC for the project. Further, TNPTPL has unconditionally accepted the upfront coal tariff. In view of the said, the Authority is of the considered opinion that project of TNPTPL fulfills the least cost option criteria as envisaged in the Rule-3(5) of the Generation Rules.

(x). In view of the above, the Authority is of the considered opinion that TNPTPL qualifies for the grant of generation licence in terms of NEPRA Act, the Generation Rules and the Licensing Regulations.

(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.).

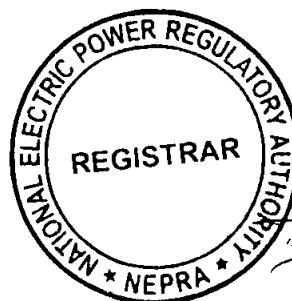
(ii). Increasing electricity consumption per capita can directly stimulate faster economic growth and indirectly achieve enhanced social development. In



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 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 TNPTPL is consistent with the provisions of Power Policy 2015.

(iv). The term of a generation licence under the Rule-5 of the Generation Rules is to be commensurate with the maximum expected useful life of the units comprised in a generating facility. Further, as per the International benchmarks available, the useful life of a steam turbine is normally taken as thirty (30) years from its Commercial Operation Date (COD). TNPTPL has confirmed that based on the up-front tariff determined by the Authority for Thar coal projects, it will be negotiating a Power Purchase Agreement (PPA) with CPPA-G for a period of

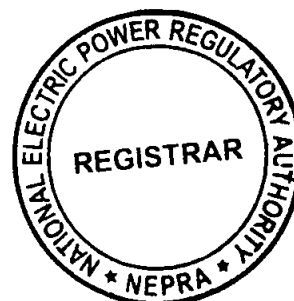


Thirty (30) years. In view of the said, the Authority hereby fixes the term of the proposed generation licence of TNPTPL as thirty (30) years from COD of the project.

(v). Regarding tariff that the company will charge from the Power Purchaser/CPPA-G, 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-367/TPTPL-2016/14217-14219 dated October 18, 2016 has granted an up-front tariff to TNPTPL for its project. The Authority directs TNPTPL 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.

(vi). Regarding compliance with the environmental standards, the Authority directs TNPTPL 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 TNPTPL 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.

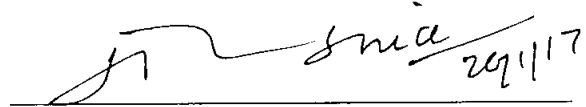
(vii). Regarding land of the project, it is clarified that Sindh Engro Coal Mining Company has allocated 110 Acres of land to TNPTPL, near Islamkot, Thar Block-II, District Tharparker, in the Province of Sindh as mentioned in the Schedule-I of the generation licence. In this regard, the Authority directs TNPTPL that the aforementioned land shown in schedule-I shall be exclusively used for the proposed coal power plant and TNPTPL cannot carry out any other activity on this land except with prior approval of the Authority.



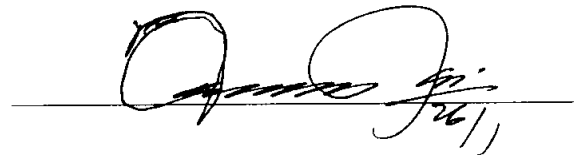
In view of the above, the Authority hereby approves the grant of generation licence to TNPTPL on the terms and conditions set out in the generation licence annexed to this determination. The grant of generation licence will be subject to the provisions contained in the NEPRA Act, relevant rules, regulations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

Authority:

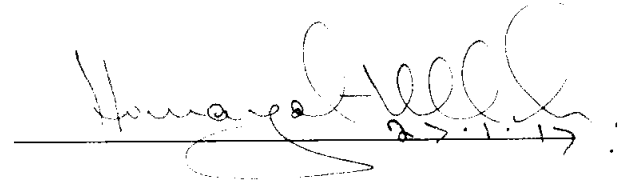
Maj. (R) Haroon Rashid
(Member)



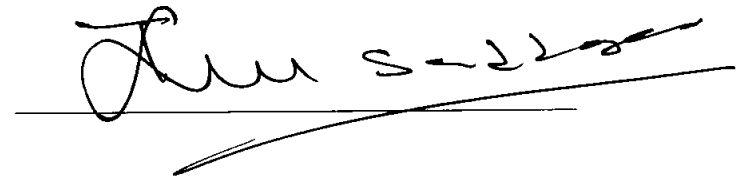
Syed Masood-ul-Hassan Naqvi
(Member)

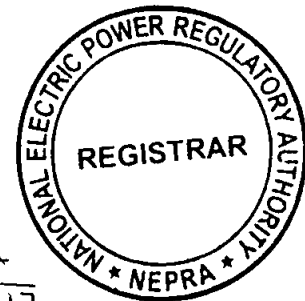


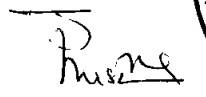
Himayat Ullah Khan
(Member/Vice Chairman)



Tariq Saddozai
(Chairman)






21.02.17

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

GENERATION LICENCE

No. IGSPL/75/2017

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:

THALNOVA POWER THAR (PRIVATE) LIMITED

Incorporated Under Section-32
of the Companies Ordinance, 1984 (XL VII of 1984) Having Corporate
Universal Identification No.0099023, Dated April 18, 2016

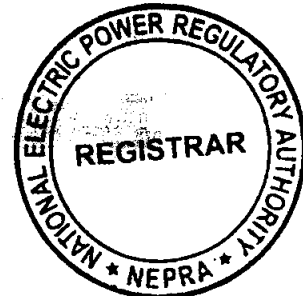
**for its Indigenous/Thar Coal Based Thermal Generation Facility Located
near Islamkot, Thar Coal Block-II, District Tharparker, in the Province of
Sindh**

(Installed Capacity: 330.00 MW Gross)

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

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

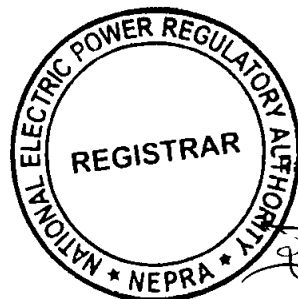
J. Hussain
01.02.17
Registrar



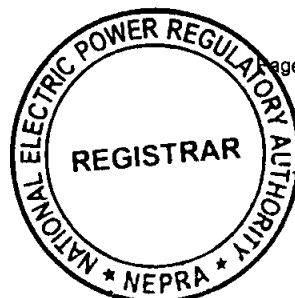
Article-1
Definitions

1.1 In this Licence

- (a). "Act" means "the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997";
- (b). "Applicable Documents" 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 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). "IEC" means International Electrotechnical Commission or any other entity created for the like purpose and its successors or permitted assigns;
- (i). "IEEE" means the Institute of Electrical and Electronics Engineers and its successors or permitted assigns;
- (j). "Interconnection Point" the physical point or points where the generation facility and the Grid System are to be connected;
- (k). "Law" means the Act, relevant rules and regulations made there under and all the Applicable Documents;
- (l). "Licensee" means "Thalnova Power Thar (Private) Limited" and its successors or permitted assigns;
- (m). "NTDC" means National Transmission and Despatch Company Limited and its successors or permitted assigns;
- (n). "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;
- (o). "Power Purchaser" means the CPPA-G purchasing power on behalf of XW-DISCOs from the Licensee, pursuant to Power Purchase Agreement;
- (p). "Regulations" mean "the National Electric Power Regulatory



Authority Licensing (Application & Modification Procedure)
Regulations, 1999 as amended or replaced from time to time";

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

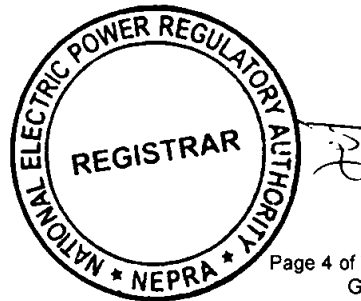
This Licence is issued subject to the provisions of the Applicable Law, as amended from time to time.

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 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.

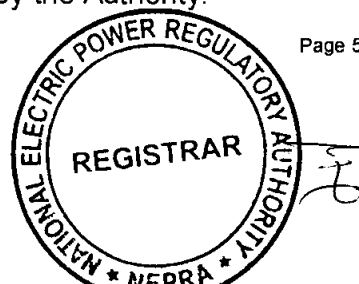
Article-6
Tariff

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.

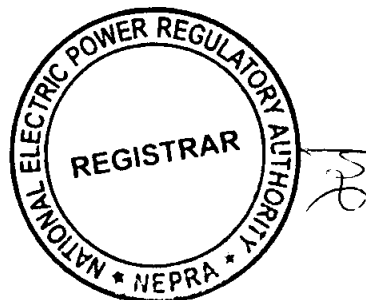
Article-10
Compliance with Environmental Standards

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.



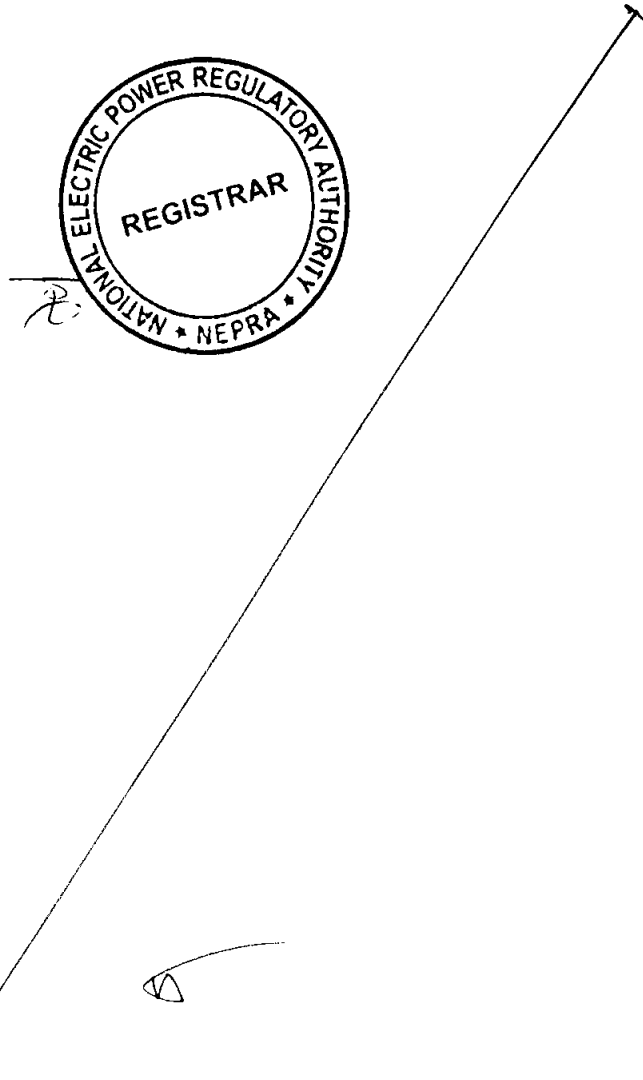
Article-12
Provision of Information

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.

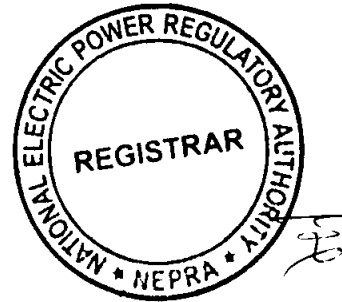
Article-13
Design & Manufacturing Standards

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.

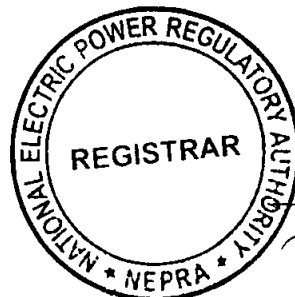
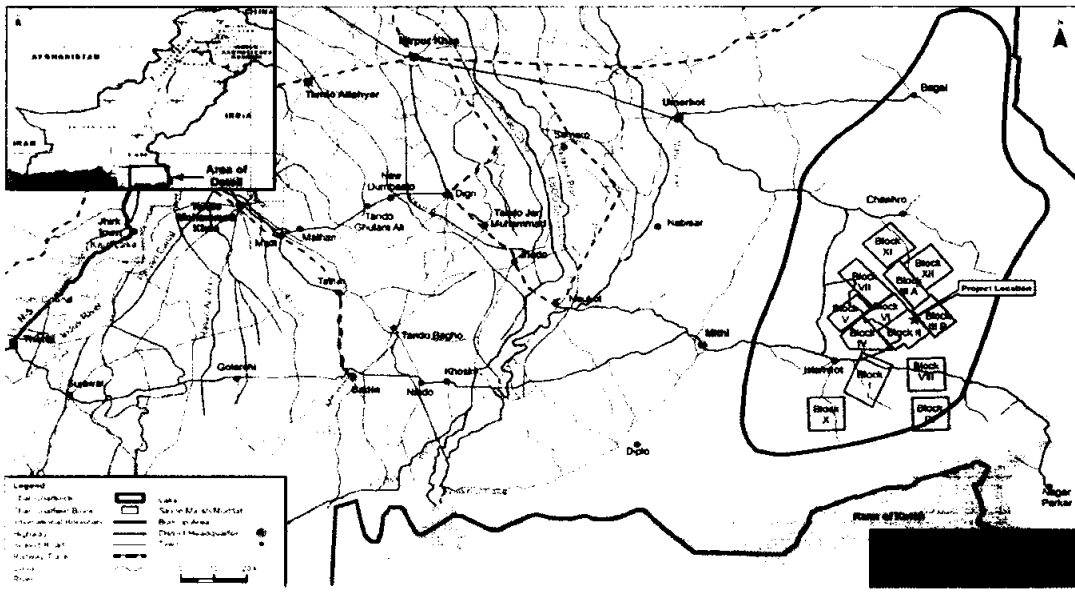
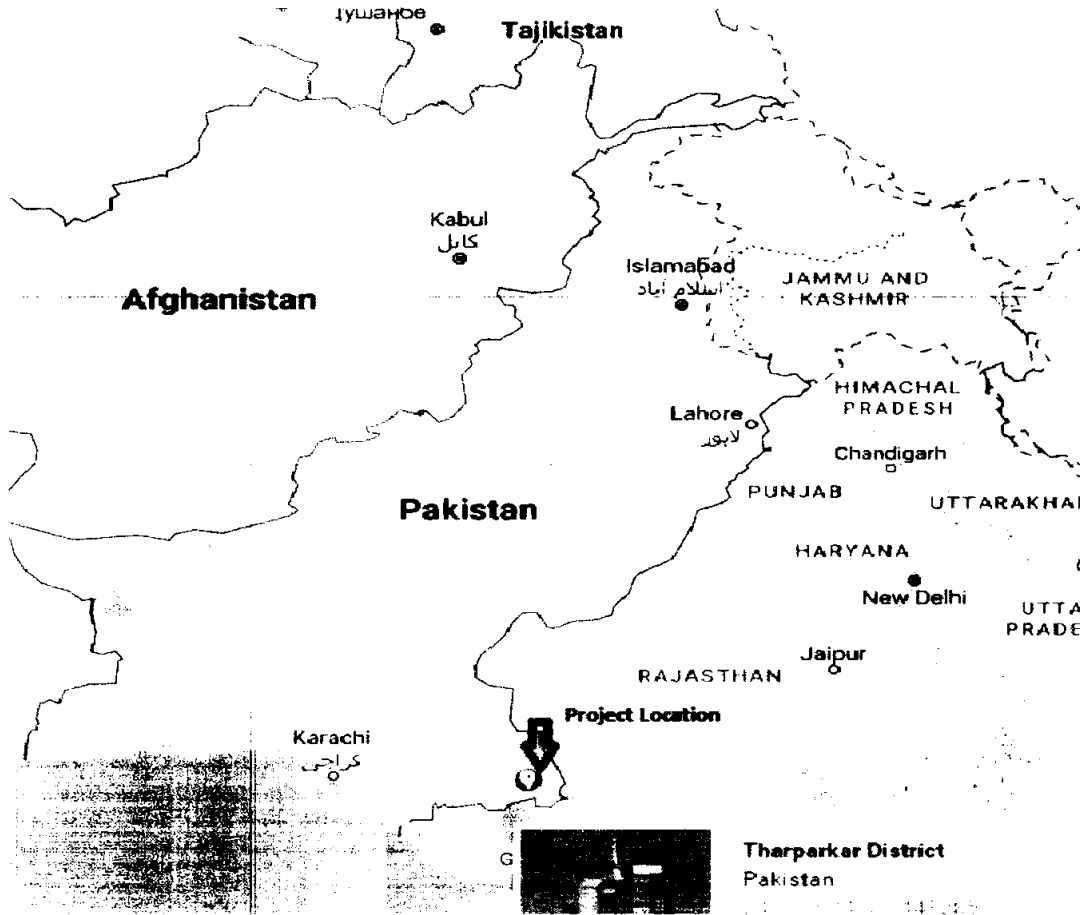


SCHEDULE-I

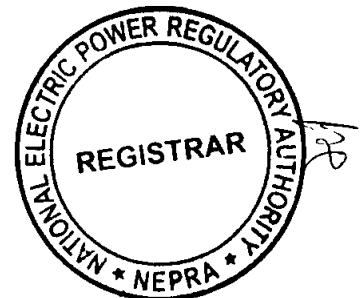
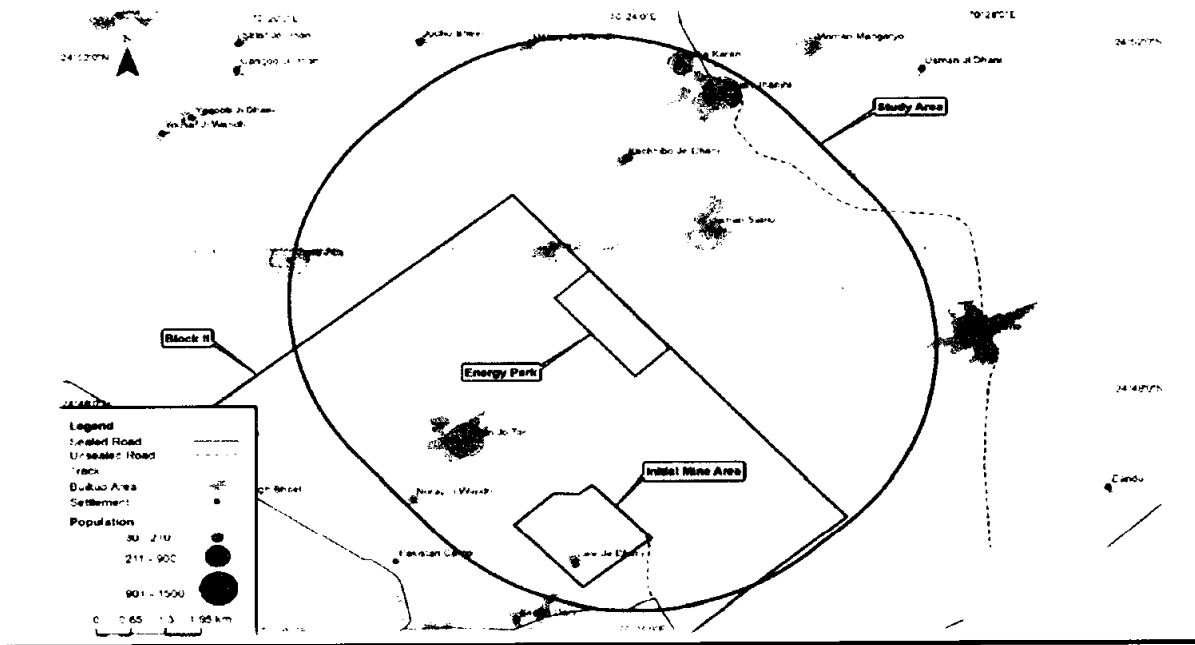
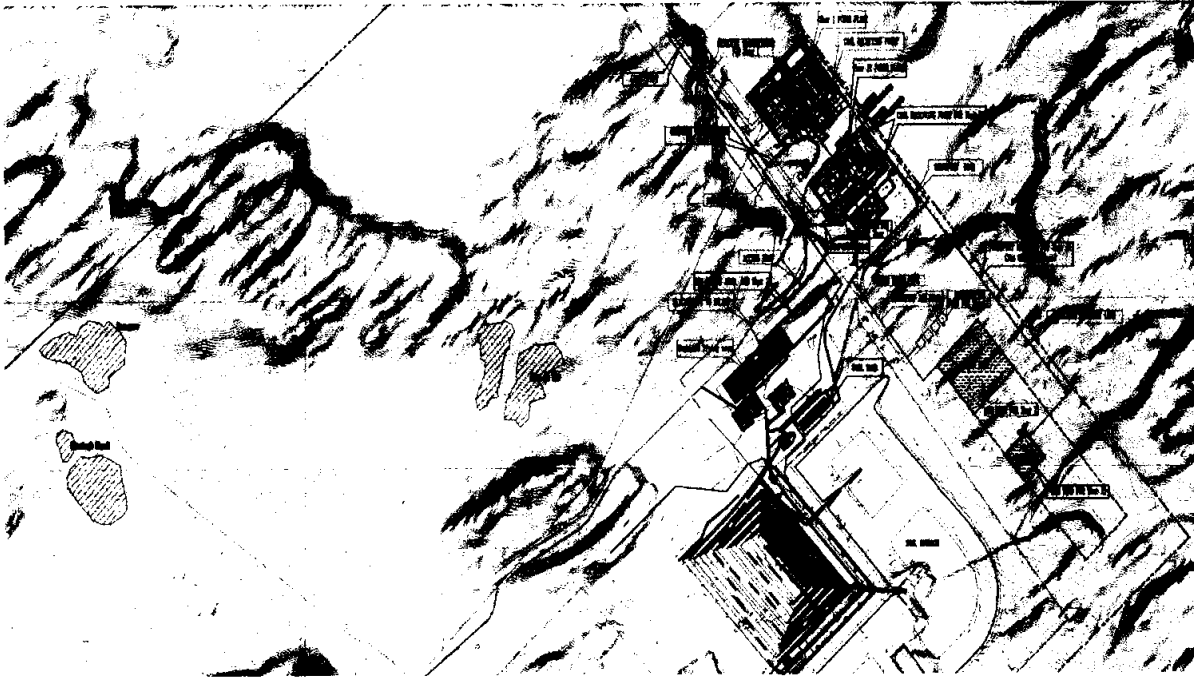
The Location, Size (i.e. Capacity in MW), Type of Technology, Interconnection Arrangements, Technical Limits, Technical/Functional Specifications and other details specific to the Generation Facilities of the Licensee are described in this Schedule



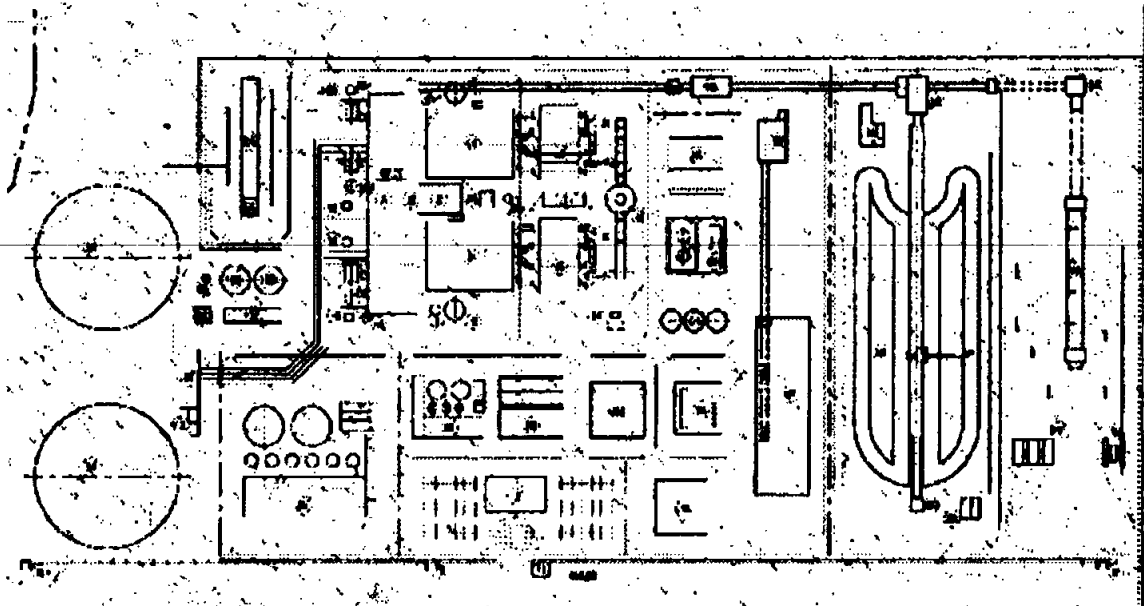
Location of the Generation Facility/Thermal Power Plant



Location of the Generation Facility/Thermal Power Plant



Layout and
Land Coordinates of the Generation Facility/Thermal Power Plant



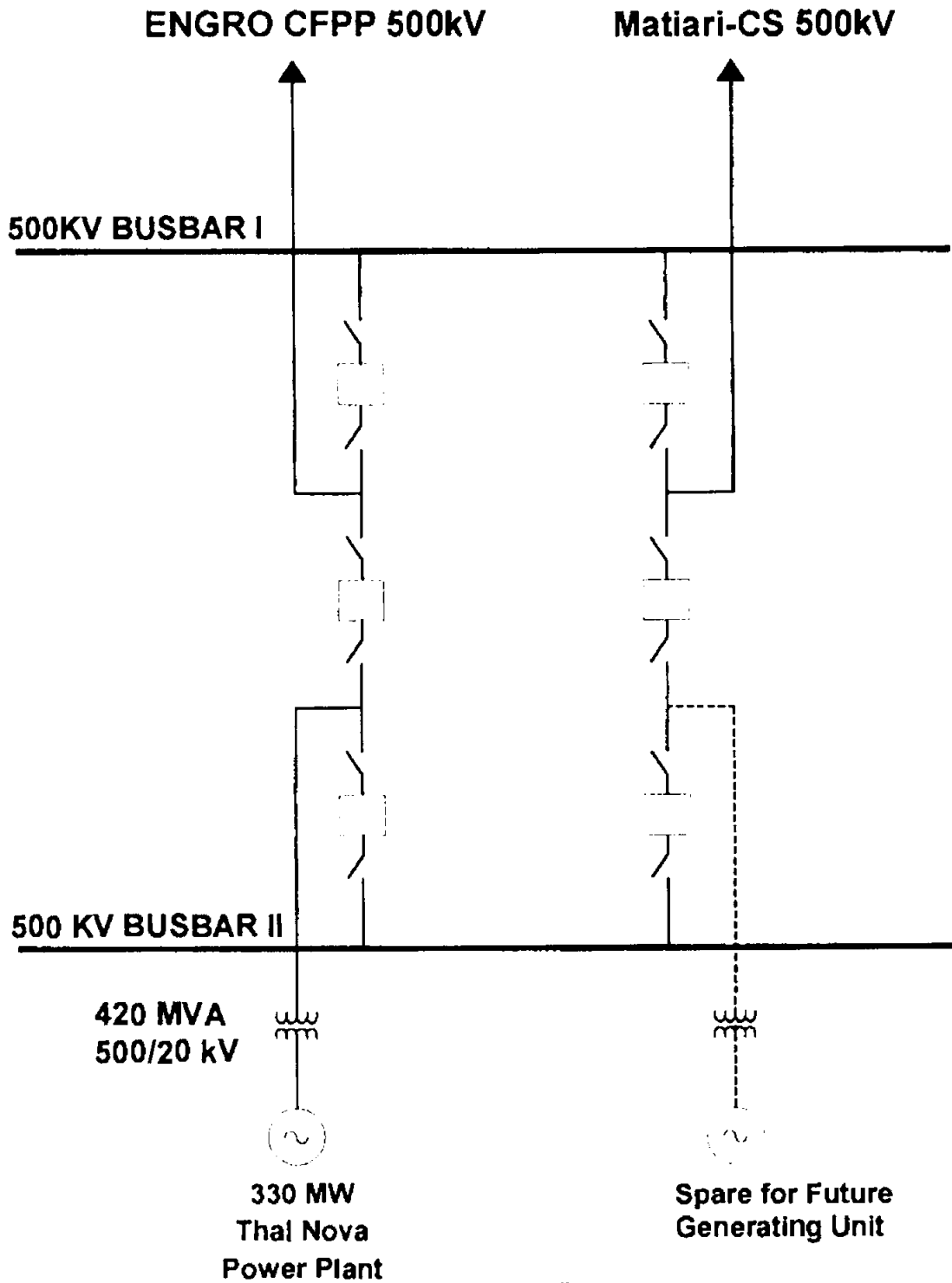
Project Land: 110 Acres

Land Coordinates (NE)

Boundary	Latitude (N)	Longitude (E)
Boundary-A	24°48'42.57"	70°23'10.35"
Boundary-B	24°49'3.16"	70°23'10.35"
Boundary-C	24°49'14.51"	70°23'10.35"
Boundary-D	24°48'54.05"	70°23'10.35"



Single Line Diagram
of the Generation Facility/Thermal Power Plant

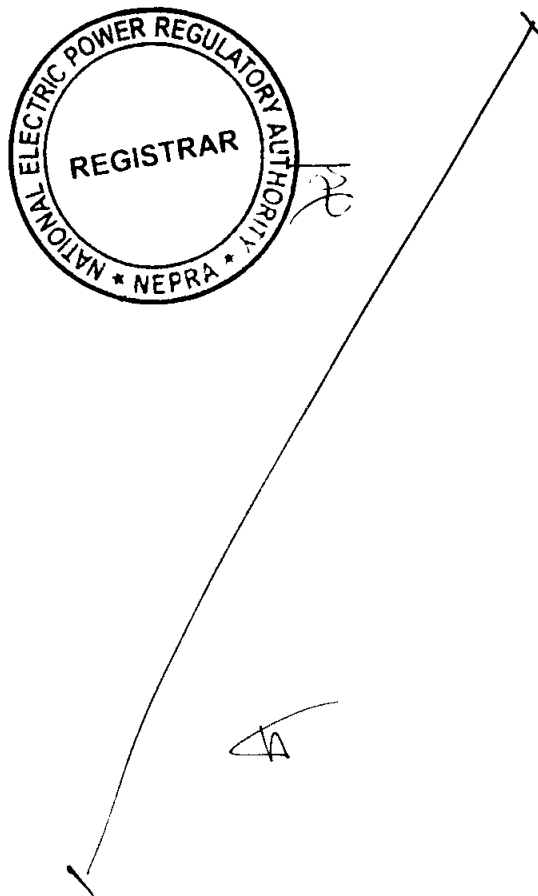


**Interconnection Facilities/
Transmission Arrangements for Dispersal of Power from the
Generation Facility/ Thermal Power Plant**

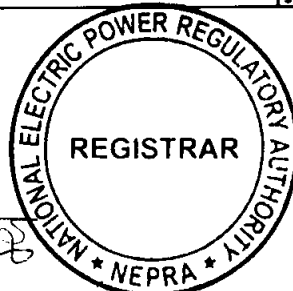
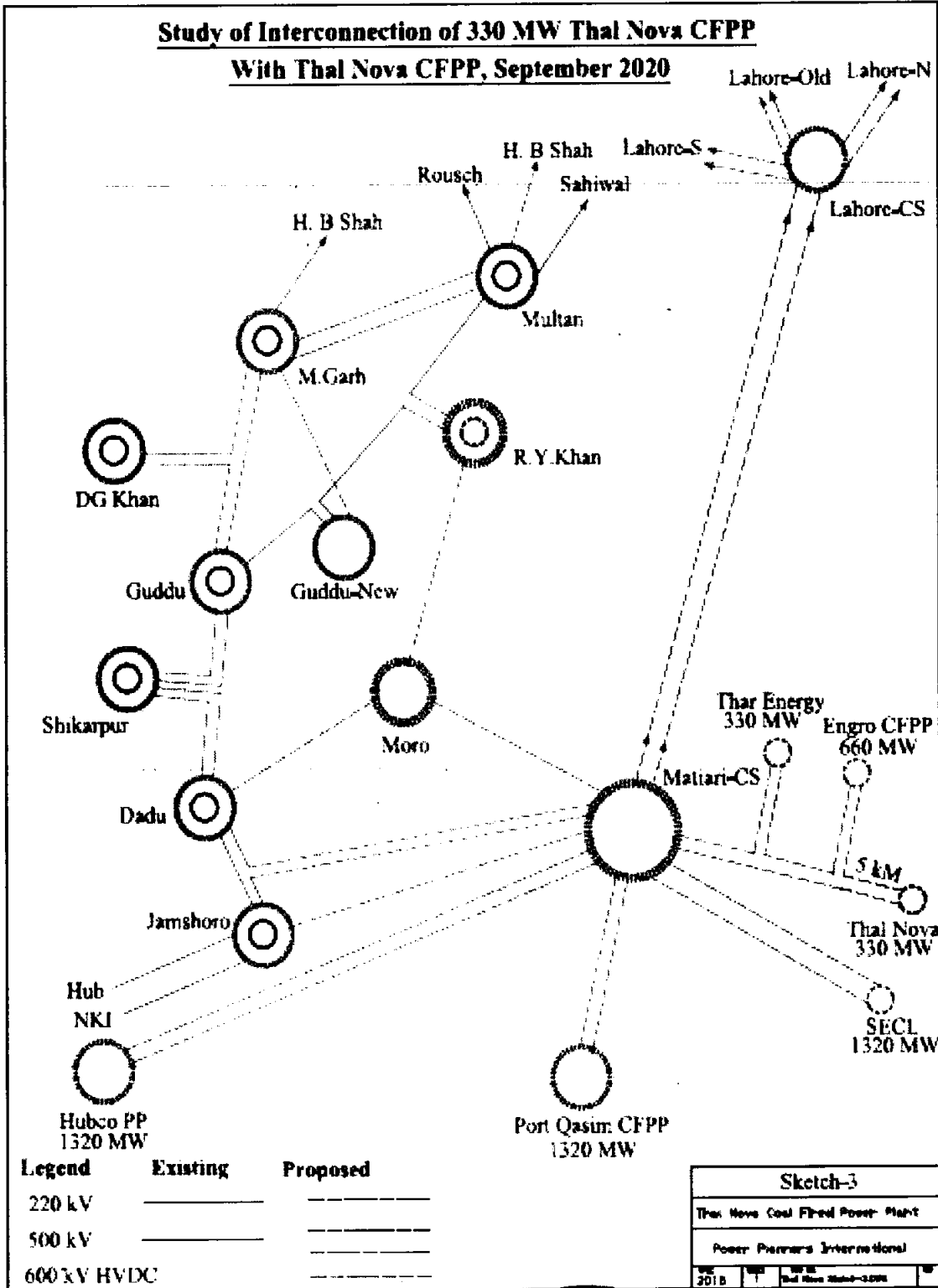
The electric power from the Coal based generation facility of Thalnova Power Thar (Private) Limited (TNPTPL) will be dispersed to the National Grid.

(2). The interconnection facilities /transmission arrangement 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 looping in-out arrangement of 500 kV circuit between Engro Coal Fired Power Plant and Matiari Converter Station.

(3). Any change in the above mentioned interconnection facilities /transmission arrangement 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**



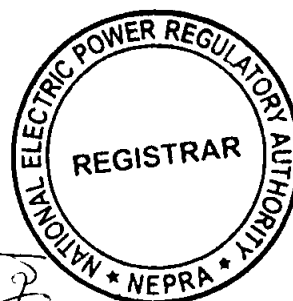
Details
Of the Generation Facility/
Thermal Power Plant

(A). General Information

(i).	Name of Company/Licensee	Thalnova Power Thar (Private) Limited
(ii).	Registered /Business Office	Ground Floor, G&T Tower, #18 Beaumont Road, Civil Lines-10, Karachi.
(iii).	Location of the Generation Facility	near Islamkot, Thar Coal Block-II, District Tharparker, in the Province of Sindh
(iv).	Type of Generation Facility	Mine Mouth Lignite fired power generation

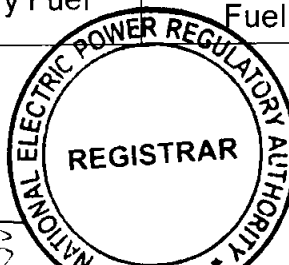
(B). Plant Configuration

(i).	Installed Capacity/ Plant Size of the Generation Facility	330.00 MW	
(ii).	Type of Technology	Sub-critical parameters with Circulating Fluidized Bed Boiler (CFB) Technology	
(iii).	Number of Units/Size (MW)	1 x 330.00 MW	
(iv).	Unit Make/Model/Type & Year of Manufacture etc.	Boiler	CFB Boiler with Sub-critical Steam Parameters of GE-Alstom or Equivalent
		Steam turbine	GE-Alstom or Equivalent
		Generator	GE-Alstom or Equivalent
(v).	COD of the Generation Facility (Expected)	December 31, 2019	
(vi).	Expected Useful Life of the Generation Facility from COD	30 years	



(C). Fuel/Raw Material Details

(i).	Primary Fuel	Thar Block-II Lignite		
(ii).	Alternative Fuel	Imported Coal (Indonesian/Equivalent)		
(iii).	Start-Up Fuel	High Speed Diesel		
(iv).	Fuel Source f	Primary Fuel	Alternative Fuel	Start-Up
		Lignite Coal from Thar Block-II	To be imported from Indonesia or equivalent	Indigenous/ Imported
(v).	Fuel Supplier	Primary Fuel	Alternative Fuel	Start-Up
		The main fuel source is indigenous, produced from Thar Block-II lignite mine, owned & operated by Sindh Engro Coal Mining Company (SECMC)	To be imported from Indonesia or equivalent	PSO/ Equivalent
(vi).	Supply Arrangement	Primary Fuel	Alternative Fuel	Start-Up Fuel
		Via Trucks/ Conveyer Belt from Thar Block-II Mine to Generation Facility	Via trucks from Karachi Port	Via Trucks to Generation Facility
(vii).	No. of Storage Bunkers/Tanks/ Open Yard	Primary Fuel	Alternative Fuel	Start-Up Fuel
		Open stockyards	Open stockyard	Two Oil tanks
	Storage Capacity of each Bunkers/	Primary Fuel	Alternative Fuel	Start-Up Fuel



	Tanks/Open Yard	87,500 Ton	87,500 Ton	Approx. 600M ³
(viii).	Gross Storage	Primary Fuel	Alternative Fuel	Start-Up Fuel
		Approx. 175,000 Ton	Approx. 175,000 Ton	1200 M ³

(D). Emission Values

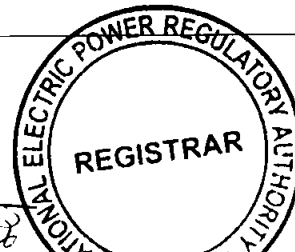
		Primary Fuel	Alternative Fuel	Start-Up Fuel
(i).	SO _x (mg/Nm ³)	<850	<850	<850
(ii).	NO _x (mg/Nm ³)	<510	<510	<510
(iii).	Particulate Matter (mg/Nm ³)	<100	<100	-

(E). Cooling System

(i).	Cooling Water Source/Cycle	Water from Left Bank Outfall Drainage-LBOD (Primary Source) and ground/well water pumped out of the mining area/other area (Backup Source)/Close cycle cooling system
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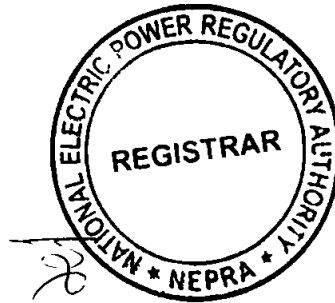
(F). Plant Characteristics

(i).	Generation Voltage	21KV
(ii).	Frequency	50Hz
(iii).	Power Factor	0.8 to 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 depending upon nature of start up and regular operational conditions.
(vi).	Time required to Synchronize to Grid (Hrs.)	3-12 Hrs depending upon the nature of startup



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



SCHEDULE-II

(1).	Total Gross Installed Capacity of the Generation Facility	330.00 MW
(2).	De-rated Capacity of Generation Facility at Reference Site Conditions	330.00 MW
(3).	Auxiliary Consumption of the Generation Facility	29.70 MW
(4).	Total Installed Net Capacity of Generation Facility at Reference Site Conditions	300.3 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).

