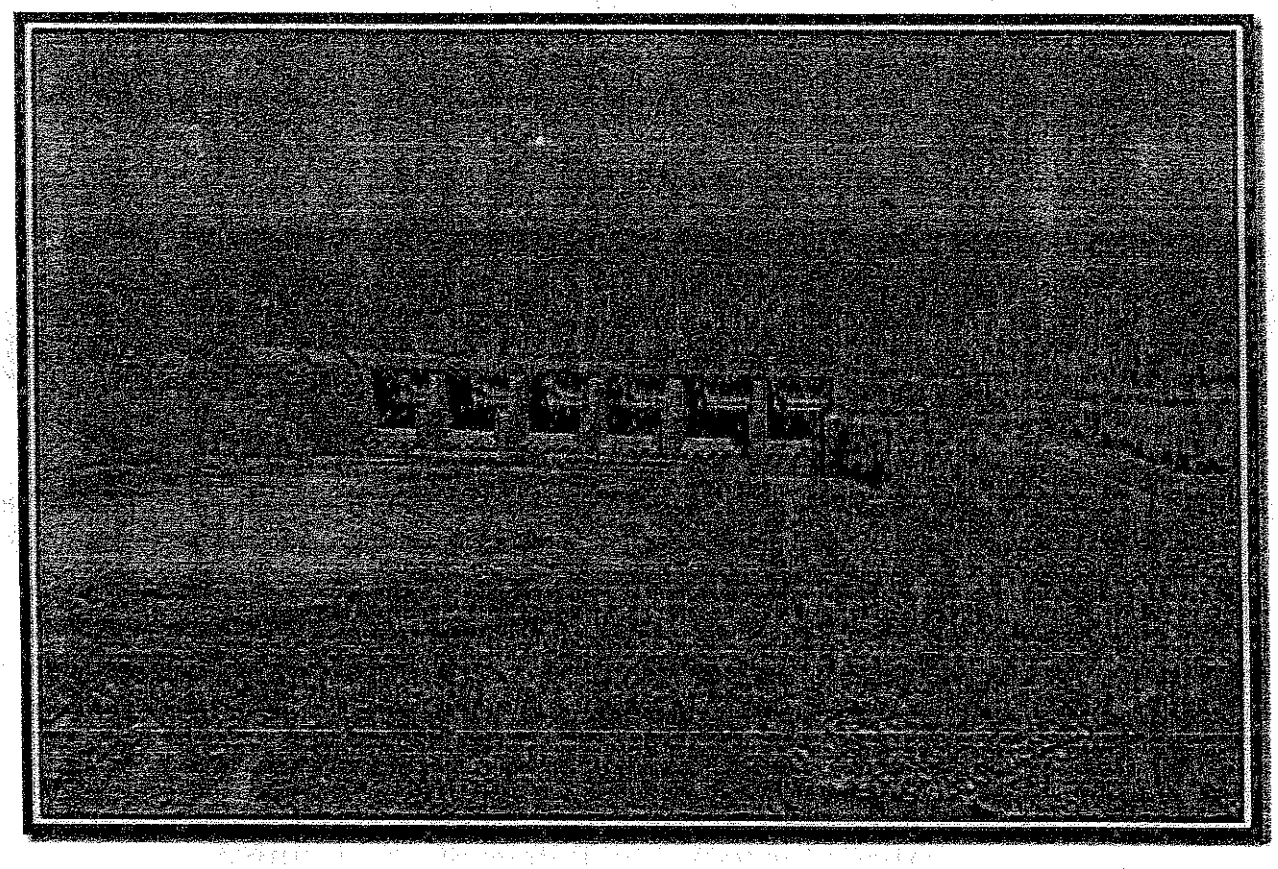
TRIDENT

FEASIBILITY STAGE TARIFF PETITION

FOR
7.55 MW LCC HYDRO POWER PROJECT
DISTRICT GUJRANWALA
(LOWR CHENAB CANAL RD 1+500)



SUBMITTED BY:

TRIDENT POWER GR (PRIVATE) LIMITED

HEAD OFFICE: SUIT # 8, GROUND FLOOR, EVACUEE TRUST COMPLEX, F-5/1, ISLAMABAD

BUSINESS ADDRESS: HOUSE NO. 359-H, STREET NO. 4, PHASE V, DHA, LAHORE CANTT

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Account Payee Only

HBL HABIB BANK

T-BLOCK, DHA LAHORE 2268

LAHORE

B.C. No. 22932958

Stationary No: 22932958

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Pay to REGISTRAR NATIONAL ELECTRIC POWER REGULATORY AUTHORITY (NEPRA) or Order

Rupees Three Hundred Seventy Three Thousand Eight Hundred Eighty Eight Only.

PKR ********373,888.00

Payable at any HBL Branch in Pakistan
Centralised Cheque Payable Account
30019903902586

Signatory PA No.

Muhammad Naeem Shahid
Branch Operations Manager PA# 17765
HBL T-BLOCK DHA-BR
LAHORE 2268

Signatory PA No.

Please do not write below this line.

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TRIDENT Trident Power GR (Pvt) Limited

August 24, 2020

The Registrar
National Electric Power Regulatory Authority
NEPRA Tower, Ata-Turk Avenue
Sector G-5/1
Islamabad

<u>APPLICATION FOR TARIFF DETERMINATION ON COST-PLUS BASIS FOR 7.55 MW LCC HYDRO POWER PROJECT AT LCC RD 1+500, DISTRICT GUJRANWALA</u>

Dear Sir,

I, Yousuf Mehboob Khan, Chief Executive Office, being the duly authorized representative of M/s Trident Power GR (Private) Limited by virtue of Board Resolution dated August 03, 2020, hereby submit a feasibility stage tariff petition for 7.55 MW LCC Hydro Power Project (the "Project") located at Lower Chenab Canal (LCC RD 1+500) and request for NEPRA's approval.

I certify that the documents-in-support attached with this application are prepared and submitted in conformity with the provisions of the National Electric Power Regulatory Authority and undertake to abide by the terms and provisions of the above-said regulations. I further undertake and confirm that the information provided in the attached documents-in-support is true and correct to the best of my knowledge and belief.

A Bank Draft #. 22932958 dated August 12, 2020 for sum of Rupees 373,888 (Rupees three hundred seventy-three thousand eight hundred eighty-eight only), being the non- refundable upfront tariff petition application fee, is also attached herewith.

I hereby further request the Authority to determine the feasibility stage tariff petition for the project.

Yousuf Mehboob Khan
CEO & Authorized Representative

TRIDENT POWER GR (PRIVATE) LIMITED — TRIDENT

For information x/c
- DR-I / M
- MF
- Copy 1.
- SAT-1

cc: Chairman
- VC (MCL)
- MC CAI
- MC (Ty)
- MC (MFE)

Received along with B. D. # 22932958

REGISTRAR
Dy. No: 17902
Dated: 25/8/20

Registered Office: Suite # 8, Ground Floor, Evacuee Trust Complex, F-5/1, Islamabad. Ph: +92-51-2870422-23 Fax: +92-51-2870424
Lahore Office: House # 359-H, Street # 4, Phase 5, DHA, Lahore Cantt.

TRIDENT Trident Power GR (Pvt) Limited

DETAILS OF PETITIONER

Name and Address:

Trident Power GR (Private) Limited

Head Office: Suit # 8, Ground Floor, Evacuee Trust Complex, F-5/1, Islamabad

Business Address: House No. 359-H, Street No. 4, Phase V, DHA, Lahore Cantt

Contact #: +92 51 2870422-23; Cell: +92 300 5553435

Yousuf Mehboob Khan
CEO & Authorized Representative

TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

TRIDENT **Trident Power GR (Pvt) Limited**

MINUTES OF BOARD OF DIRECTORS MEETING

The meeting of the Board of Directors of M/s. TRIDENT POWER GR (PRIVATE) LIMITED was held on August 03, 2020 at 12:30 p.m. at Suite 8, Ground Floor, Evacuee Trust Complex, F-5/1, Islamabad, which was attended by the following directors:

PRESENT

- MR. FIAZ AHMAD
- MR. YOUSUF MEHBOOB KHAN
- MR. ZAFAR IKRAM SHEIKH
- SYED HADI ALI RIZVI

CHAIR

The Directors elected **MR. YOUSUF MEHBOOB KHAN** to be the Chairman of the meeting. Quorum being present proceedings of the meeting was commenced on the instructions of the Chairman. Notice of the meeting was taken as read. The directors passed the following resolutions unanimously:

RESOLUTION NO. 1: Resolved that minutes of the last meeting of the Board of Directors be hereby confirmed and adopted.

RESOLUTION NO. 2: Resolved that the Company be and is hereby authorized to apply for the tariff petition for submission to National Electric Power Regulatory Authority (NEPRA) for determination of the reference generation tariff in respect of the 7.55 MW LCC Hydro power Project and in relation thereto, enter into and execute all required documents, make all filings and pay all applicable fees, in each, of any nature whatsoever.

RESOLUTION NO. 3: Further resolved that **MR. YOUSUF MEHBOOB KHAN** (CEO & Director) be and hereby authorized and empowered to sign, execute and deal with the National Electric Power Regulatory Authority (NEPRA) regarding the generation license, cost plus tariff, tariff approval, power purchase agreement and other related approvals and represent and sign all the related documents in respect of the same on behalf of the Company.

MR. Yousuf Mehboob Khan, Chief Executive Officer of the Company be hereby also authorized to delegate all or any of the above powers in respect of the foregoing to any other person as deemed appropriate.

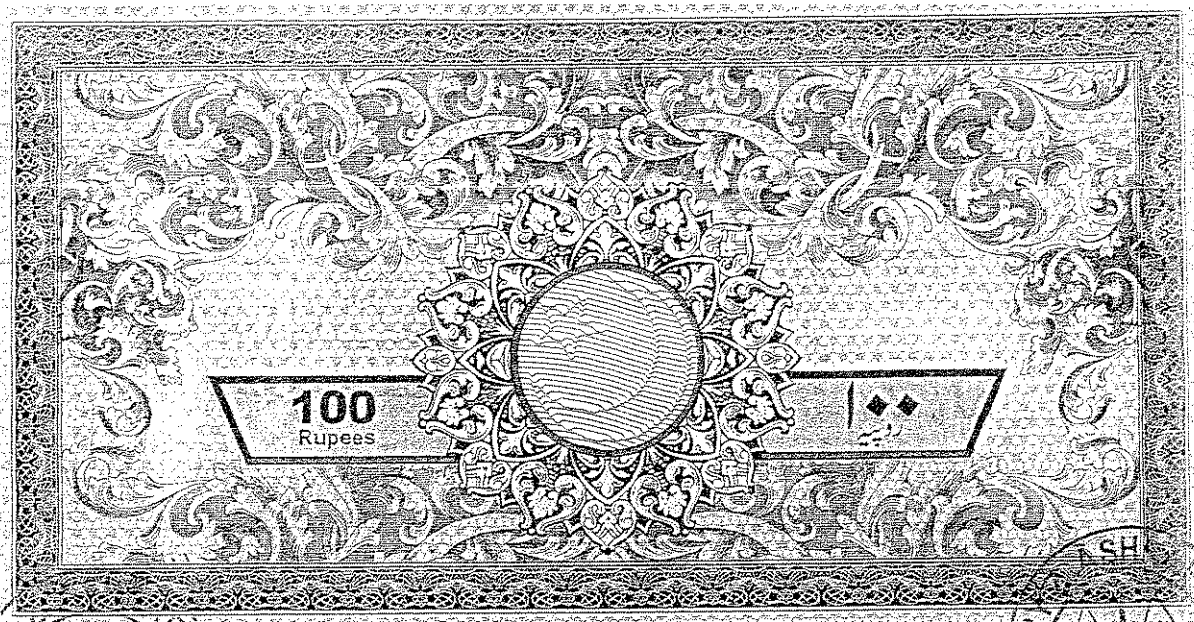
There being no other business, the meeting ended with a vote of thanks to the Chair.

Fiaz Ahmad Director	Yousuf Mehboob Khan CEO/Director	Zafar Ikram Sheikh Director	Syed Hadi Ali Rizvi Director

TRIDENT POWER GR (PRIVATE) LIMITED TRIDENT

Date: August 03, 2020
Islamabad

Yousuf Mehboob Khan
Chairman & CEO



BEFORE THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

AFFIDAVIT

I, Yousuf Mehboob Khan son of Mehboob Ali Khan CNIC No. 61101-1916030-3, the Authorized Representative and Chief Executive Officer, Trident Power GR (Private) Limited having its registered office at Suite 8, Ground Floor, Evacuee Trust Complex, F-5/1, Islamabad.

I, the above-named Deponent, do hereby solemnly affirm and declare as under:

1. I am the Authorized Representative of the Company.
2. That I have filed accompanying Tariff Petition together with supporting documents before the NEPRA and the contents of the same may kindly be read as integral part of this affidavit.
3. That the contents of the accompanying tariff petition, and all further attached documents-in-support are true and correct to the best of my knowledge and belief and that nothing has been concealed.

DEPONENT
Yousuf Mehboob Khan
Authorized Representative

Verification

Verified on oath on this 21st August 2020 that the contents of this affidavit are true to the best of my knowledge and belief.

DEPONENT
Yousuf Mehboob Khan
Authorized Representative

ATTESTED
Chaudhary Z. Ashraf Advocate
Notary Public, Lahore

ATTESTED
Chaudhary Z. Ashraf Advocate
Oath Commissioner, Lahore

EXECUTIVE SUMMARY AND PROJECT BACKGROUND
LCC HYDROPOWER PROJECT

1.1 INTRODUCTION

God has blessed Pakistan with a tremendous hydel potential of more than 60,000 MW. However, only 15% of the hydroelectric potential has been harnessed so far. The remaining untapped potential, if properly exploited, can effectively meet Pakistan's ever-increasing demand for electricity in a cost-effective way.

High head sites exist in hilly areas and Low head hydropower sites are located at barrages, and small falls in large rivers and artificial canals which can be utilized to develop energy. All these low head hydropower projects have very little or no negative impact on the environment and social life in the area. The most significant feature of all these projects is that they are practically emission-free and help to curb global warming, since they replace thermal power in the power supply systems. In addition, country will save lot of foreign exchange by reducing import of costly fuel by utilizing environmental friendly Hydel energy.

During the last two & half decades more thermal power stations have been added to the system than development of hydel power stations, which resulted in increase in power tariff. To achieve target of meeting power demand at an affordable cost of generation, the installation of new hydel power plants is important and necessary. From this point of view, Punjab Power Development Board (PPDB) (a subsidiary of Punjab Energy Department), was established by the Government of Punjab to invite private sponsors for the development of low head hydropower projects in Punjab and fully assist them in all matters of project implementation. The LCC Hydropower Project is being proposed for development.

This chapter includes the summary of necessary studies done for the evaluation of available power and energy potential of the LCC Hydropower Project.

1.2 BACKGROUND

Pursuant to "Punjab Power Generation Policy 2006 (Revised 2009)", the Punjab Power Development Board (PPDB) invited the private firms/consortium for the development of 11 No. Raw sites Hydropower Projects in May, 2015. On the basis of prequalification documents submitted by private firms/consortium, PPDB issued a Letter of Intent (LOI) to M/s Trident Power GR (Pvt.) Ltd on March 22, 2016 for the development of Hydropower Project on Lower Chenab Canal (LCC) utilizing head available at head regulator of LCC at RD 0+000. M/s Trident Power GR (Pvt.) Ltd engaged the services of M/s Aipel Consultants on April 07, 2016 for review and updating the Feasibility Study and Initial Environmental Examination (IEE) of LCC

Hydropower Project. The feasibility study is being furnished in the light of available discharge data for the last twenty five years, available topographic layout information and geotechnical investigations carried out earlier by NESPAK and NKB (New Khanki Barrage) Consultants.

1.3 LOCATION & ACCESS TO THE PROJECT SITE

1.3.1. Access by Road

The proposed LCC Hydropower Project site is located at the left bank of Chenab River about 17 km south-east of Wazirabad which is connected to the port at Karachi through a network of highways including the main G.T.road. The approach to site from Wazirabad is through Wazirabad – Saroki / Alipur Chatha –Khanki road. The location map of proposed LCC Hydropower Project site is shown in **Figure – 1.1.**

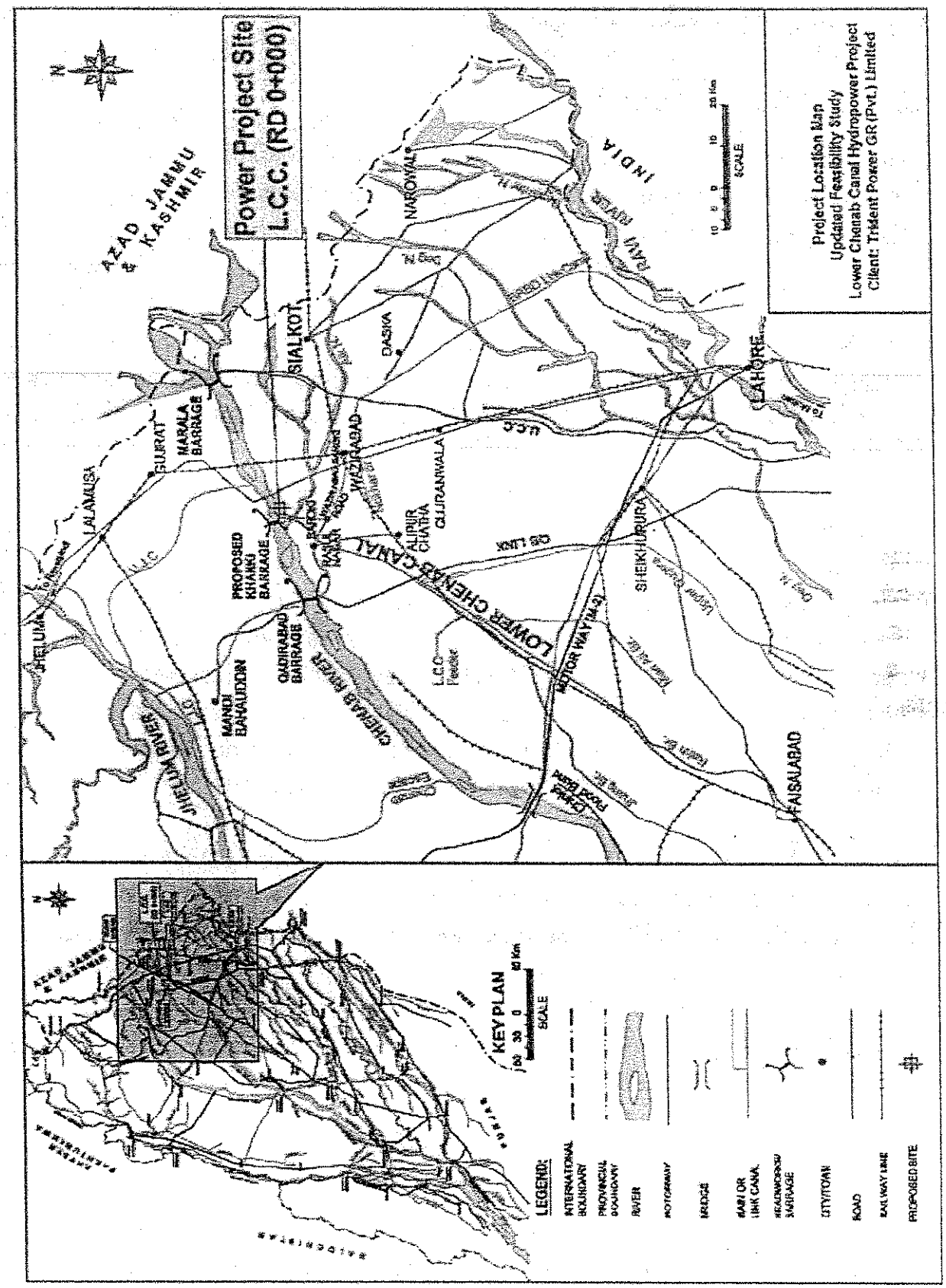
1.3.2. Access by Rail

The nearest railway station is Khanki Kacha on the Sialkot – Faisalabad line. Wazirabad is the nearest railway station on Karachi – Peshawar main railway line.

1.3.3. Access by Air

Sialkot International Airport, about 50 km north-east of the site, is the nearest airport. However the major international airport is the Allama Iqbal International Airport, in Lahore, about 160 km from the site, where many international airlines operate commercially.

Figure – 1.1: Location map of proposed LCC Hydropower Project Site



1.4 PREVIOUS STUDIES

1.4.1. Study by WAPDA-GTZ (1992)

In 1992, WAPDA in association with GTZ, prepared an inventory of potential sites on canals, and barrages for hydropower development in Pakistan. The report assessed the power and energy estimates for various low head hydel power sites which identified the fall at the LCC head regulator as a potential site. In the assessment study, gauge and discharge data for the period 1978-87 were used for estimating the water availability and gross head. The gauge and flow data pertained to the post-Tarbela and pre Water Apportionment Accord (WAA) of 1991. Design discharge of the canal for assessing the hydropower potential, was taken from longitudinal section of the canal prepared by the PID. Full supply discharge of 231 m^3/sec (8,158 ft^3/s) downstream of the canal fall was selected as preliminary design discharge and a net head of 2.63 m (8.63 ft) was used for calculating the maximum power potential of 4.95 MW.

1.4.2. New Khanki Barrage Project (2008)

Hydropower potential at the LCC regulator was also studied by the Punjab Barrage Consultants. A design discharge of 246.4 m^3/sec (8,700 ft^3/sec) was considered for power potential based on flow duration curve developed using 10-day historic discharge data for the period 1994-2003. Net head for power potential was computed using the upstream pond level at EL 224 m (735 ft) and constant tail water level at EL 220.4 m (723 ft). The increase in head was proposed by shifting of the canal fall at Chenawan at RD 40+200 of LCC to the head regulator of the LCC.

The net head for power generation was thereby increased to 4.9 m (16 ft). The proposed arrangement for power house at LCC required feeding of two canals, presently off taking from Chenawan regulator, directly from Khanki barrage through a separate feeder channel. The installed capacity of 10.5 MW was worked out with an average annual energy of 52 GWh. The hydropower scheme was subsequently dropped from the new Khanki barrage project and a new head regulator at Chenawan fall had since been constructed.

1.4.3. Pre-Feasibility/Ranking Study by NESPAK (2010)

In 2010, NESPAK carried out pre-feasibility / ranking study of (10) potential power generation sites on canals and barrages of the Punjab Irrigation system (Task-I). The site at the head of LCC was among the sites studied. The pre-feasibility/ranking study comprised selection of preferred layout, preliminary design of the scheme,

environmental and social impacts assessment, costing, construction scheduling and determining the 'economic internal rate of return' (EIRR) and unit generation costs for each site.

This study was based on the hydrological data since the Water Apportionment Accord (WAA) of 1991. The study concluded that the power generation site at the head of LCC has good potential and ranked this site (with new Khanki Barrage) as one of the top five ranked schemes for hydropower development.

1.4.4. Feasibility Study by NESPAK (2011)

During the second stage (Task-2), the feasibility studies of five (5) top ranked schemes (identified in the Task-I) were carried out by NESPAK. Among 5 top ranked power generation sites, the feasibility study of LCC Hydropower Project at RD 0+000 of was completed by NESPAK in 2011. The feasibility study envisaged installed capacity of 7.55 MW with an average annual energy of 43.61 GWh. It was proposed that the powerhouse shall be equipped with two Kaplan units and, shall be constructed in a separate canal to be proposed between the New LCC and existing LCC.

On April 07, 2016, M/s Aipel Consultants was awarded the consultancy agreement for review and updating the Feasibility Study and Initial Environmental Examination (IEE) of LCC Hydropower Project.

1.5 EXISTING SITE CONDITIONS & CONSTRUCTION OF NEW KHANKI BARRAGE

At present, Project Management Office (PMO, Barrages) of the Punjab Irrigation Department, Government of Punjab is executing the construction of New Khanki Barrage (900 feet downstream of the existing headworks), which will cause the dismantling of the existing headworks and LCC. Accordingly the New LCC Regulator has been constructed and it is expected that New LCC shall be commissioned in October, 2016.

1.5.1. Existing LCC Head Regulator

There are two head regulators of the Lower Chenab Canal (LCC). The main head regulator consisting of 12 bays is adjacent to the existing Khanki headworks and was a part of its original construction. The subsidiary head regulator, constructed subsequently, consists of 6 bays located on left side of the main head regulator.

Figure-1.2 & 1.3 shows the upstream and downstream views of the regulators.

Figure – 1.2: Upstream View of Existing LCC Head Regulators

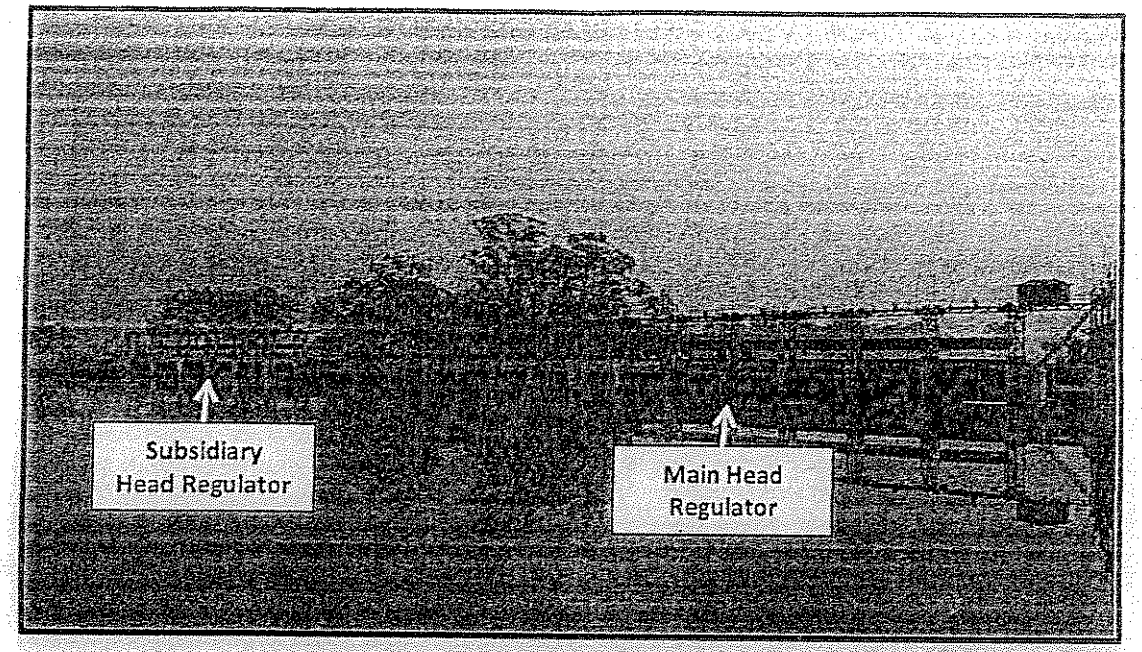
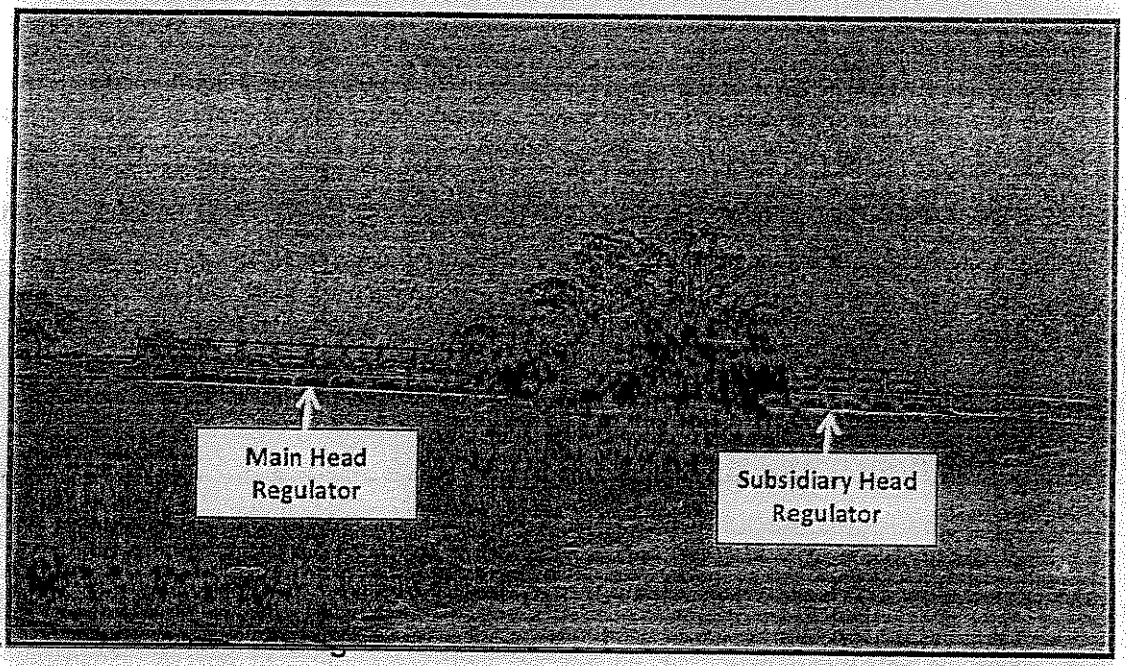


Figure – 1.3: Downstream View of Existing LCC Head Regulators



1.5.

A new LCC Head Regulator at RD 0+000 is under construction by Punjab Irrigation Department and 95% of the its civil and electromechanical works have been completed. This new head regulator comprised of 6 bays having width of 30 ft. each. On the commissioning of Lower Chenab Canal (LCC) which is expected in October 2016, the existing LCC head regulators shall be dismantled. **Figure-1.4 & 1.5** shows the upstream and downstream view of new under construction LCC head regulator.

Figure – 1.4: Upstream View of Under Construction New LCC Head Regulator

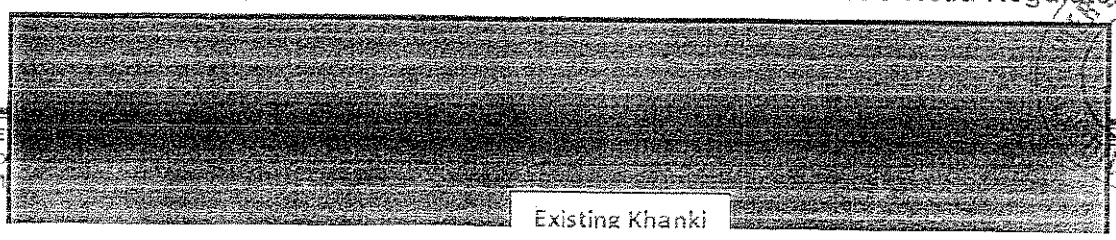
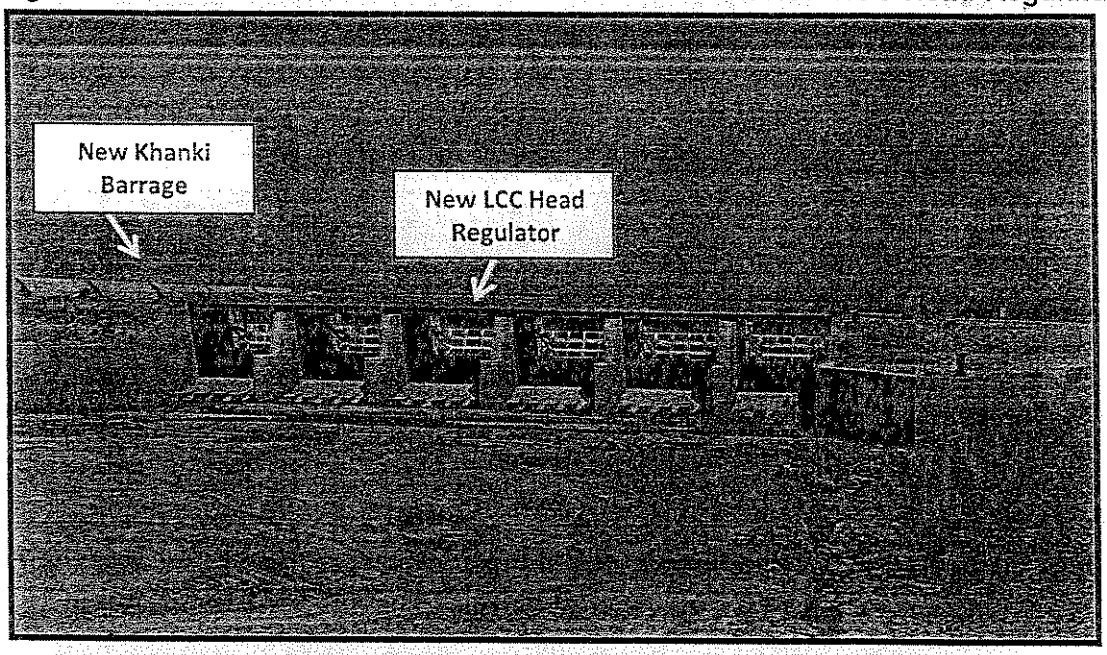


Figure – 1.5: Downstream View of Under Construction New LCC Head Regulator



1.6 NEED FOR AN UPDATED STUDY

The earlier studies were conducted with the idea that the powerhouse at LCC RD 0+000 shall be constructed during the construction of New Khanki Barrage and the alternatives were furnished accordingly. Besides this, only two power generating units were suggested for powerhouse. However, it is believed that two units may not be practicable for the leading European manufacturers for such low heads and high discharges. Secondly, in order to avoid extensive care & handling of water and complex construction methodology, a revised project layout with simpler construction methodology is recommended. Furthermore, previous studies did not consider efficient measures for canal bed load which is required to be given due importance. A

need for an updated and bankable feasibility study for the said hydropower scheme was envisaged by PPDB incorporating the latest prevailing prices of civil works and selection of appropriate power generating units.

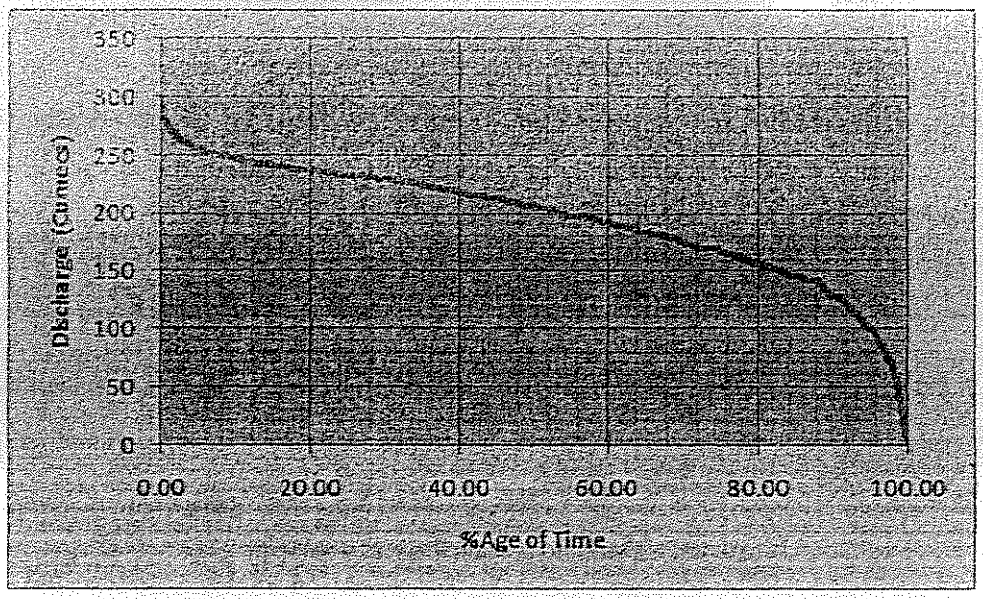
1.7 CLIMATE

The mean annual rainfall of the area is about 1045 mm (41 inches). The maximum rainfall occurs during the months of July, August and September, which is about 70% of the annual rainfall. Precipitation in the project area is characterized by the monsoon season. Most of the rainfall occurs during the monsoon season (May to October). Winter rains generally occur during the months of January, February and March.

1.8 HYDROLOGY AND DISCHARGE OPTIMIZATION

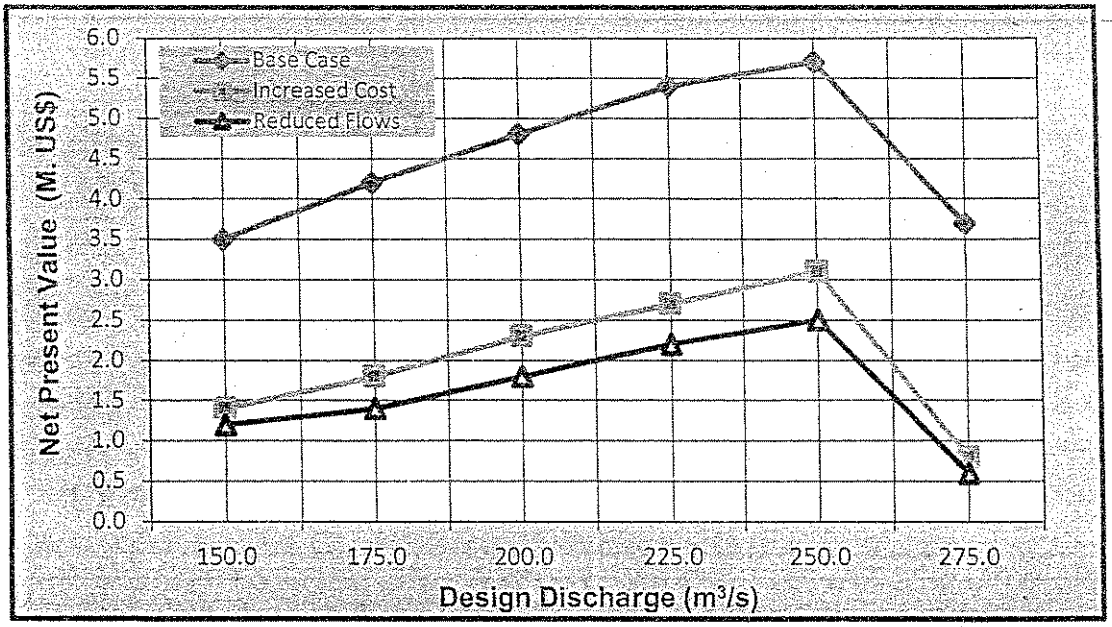
LCC off-takes from the left bank of Khanki Barrage. The canal was commissioned in 1892. At present, construction of New Khanki Barrage and New LCC Regulator is also in progress. Discharge data since 1991 is considered and the flow duration curve is provided in Figure 1.6 below:

Figure 1.6: Flow Duration Curve



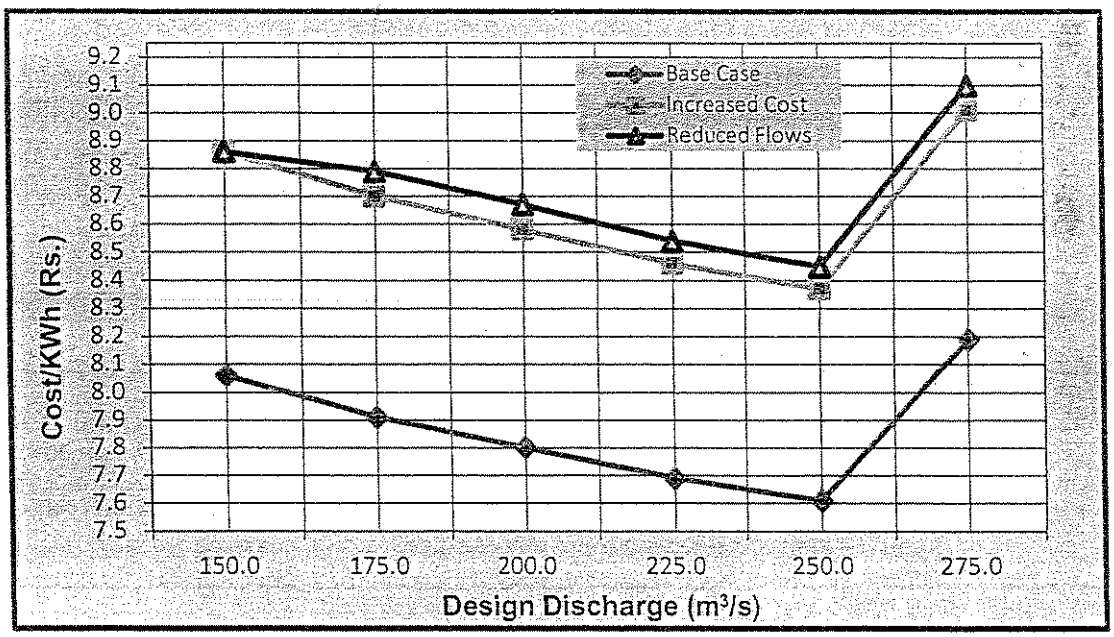
With power and energy values, benefits and costs have been estimated for design discharges ranging from 150 m^3/s to 275 m^3/s. Three scenarios have been analyzed to check the sensitivity of selected capacity. These three scenarios include the selection of discharge after its comparison with Net Present Value (NPV), Cost/KWh and Benefit to Cost Ratios (BCR) respectively.

Figure - 1.6: NPV vs Design Discharge Curve



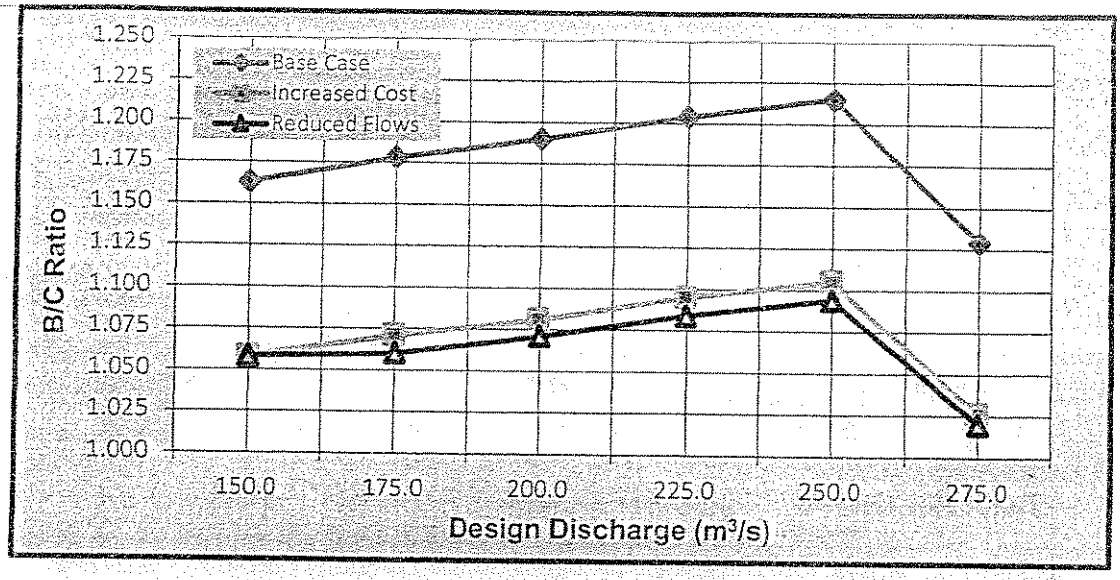
Similarly, the unit cost vs discharge curves are drawn for above mentioned three scenarios and are presented in **Figure - 1.7**.

Figure - 1.7: Cost/kWh vs Design Discharge Curve



The graph indicates that unit cost for all the three scenarios decreases to minimum and then it increases again. The analysis for all the three scenarios indicates that unit cost/KWh is minimum for the design discharge of 250 m^3/s. Benefit to cost ratio has also been checked for various discharges. The B/C ratio vs. discharge curves are drawn for above mentioned three scenarios and is presented in **Figure - 1.8**.

Figure - 1.8: B/C Ratio vs Design Discharge Curve



The graph indicates that B/C ratio increases to maximum for a discharge of 250 m^3/s and then it decreases for higher discharge. All the three scenarios indicate that B/C ratio is maximum at design discharge of 250 m^3/s.

From all the three scenarios, it can be concluded that NPV is in maximum range for a design discharge of 250 m^3/s. From the analysis, it can be inferred that the project would provide maximum net benefits when discharge is 250 m^3/s.

1.9 GEOTECHNICAL AND GEOLOGICAL STUDY

The top surface of the Project area comprises of Clayey Silt/Silty Clay/Lean Clay (Soft to Very Stiff) up to a depth of 7.0 m below NSL. The material is underlain by Sandy Silt/ Silty Sand (Very Soft to Very Stiff, Dense to Very Dense) up to a maximum investigated depth of 20 m depth below NSL.

The Groundwater was encountered at 5.60 m depth in the boreholes drilled up to a maximum depth of 20 m below NSL.

The arrival time of shear waves and longitudinal waves at each successive meter are obtained from seismic records with source at a distance of 1.0 meter. The interpreted results of Seismic Investigations at BH-2 indicate that shear wave velocity ranges between 103 m/sec to 543 m/sec and compressional wave velocity varies between 228 m/sec to 910 m/sec up to 20 m depth.

1.10 INITIAL ENVIRONMENTAL EXAMINATION

The LCC Hydropower Project seems to be environment friendly. It has minimal environmental impacts. Environmental considerations have formed an integral part of the evaluation of layout and design alternatives with the result that all the potential effects of the project have been mitigated. The proposed project layout plan does not involve any permanent land acquisition or resettlements.

1.11 ALTERNATIVES AND PROJECT COMPONENTS

The following two alternatives options have been considered:

Alternative 1: Construction of power plant within New LCC at RD 1+500

Alternative 2: Construction of power plant in separate canal off-taking upstream of New LCC

It is expected that New LCC Regulator shall be commissioned in October, 2016.

It is proposed that powerhouse should be constructed within the main canal at RD 1+500 and an illustrative layout of this alternative is provided as Drawing No. LCC-HEPP-FS-18. The canal banks shall be raised on both sides from RD 0+000 up to the powerhouse which will allow the utilization of available head at RD 0+000 for power generation at RD 1+500. In this scenario, the canal will follow its original regime and there will be minimum disturbance to the hydrological behavior of the canal. The main canal shall be diverted temporarily during canal closure and coffer dams shall be constructed on upstream and downstream of the proposed powerhouse at the confluence of diversion and main canal. Therefore, construction works of the power plant can be executed independently without disturbing the canal operations. A spillway catering the same discharge capacity as of LCC head regulator is proposed alongside the powerhouse within the main canal in order to safely manage the canal operations during emergency shutdown of the power plant.

The Hydropower Project utilizes a net head of 11.5 ft. available at the Regulator / fall structure at RD 0+000. The New Regulator at RD 0+000 shall be de-activated meaning thereby the gates will always be fully open. The discharge shall be regulated by the downstream spillway gates and power generating units as it will regulate with much better efficiency. The Regulator at RD 0+000 of New LCC shall only be activated in case of flood condition in the reservoir in order to avoid flood levels in the canal.

1.12 SELECTION OF TURBINE

As per the available head of 11.5 ft. at the proposed project site, it is recommended to install Kaplan Type Horizontal Turbines. Major parameters of selected unit are mentioned in Table-1.1.

Table – 1.1: Turbine Characteristics

Design or Rated Net head	3.5 m
Design or Rated Discharge	250 m^3/s
Rated turbine output	1.95 MW
Turbine speed	90.5 rpm
Generator speed	750 rpm
Specific speed	869.9
Runaway speed	254 rpm
Runner diameter	3642 mm
Number of runner blades	3
Runner weight	13042 kg
Inlet height	8.47 m

Hydraulic thrust	10450 kg
Number of units	4
Installed capacity	7.5 MW
Average Net Deliverable Energy / Year	43.71 Gwh

1.13 POWER AND ENERGY ESTIMATION

Power and energy estimation is furnished on the basis of the following:

- Net head is 11.5 ft. (3.5m)
- Design discharge is 8827 cusecs. (250 m3/s)
- Installed capacity of LCC Hydropower Plant is 7500 KW which gives us average annual energy of 43.71 GWh.
- Plant capacity factor is 66.53 %.

1.14 CONSTRUCTION PLANNING & MANAGEMENT

The LCC Hydropower Project is planned to be constructed in a period of36 months. This includes Civil, Electro-mechanical, Transmission and Interconnection works from installation to commissioning. Special consideration should be given to the critical tasks related to the canal closure and schedule delivery of Turbines, Generators & other E&M equipment to site.

1.15 PROJECT COST ESTIMATION

Rates being charged at the Construction of New Khanki Barrage including escalation up to year 2015 have been considered. Cost of electromechanical equipments has been considered from European origin. Total EPC Cost as mentioned in Table 11.1 above is PKR 2,461,709,999 and the same has been considered for financial analysis.

1.16 ECONOMIC ANALYSIS

The Economic indicators namely (i) EIRR at 10%, 12% and 14% discount rates is Rs. 552,793,431.75, Rs. 268,124,912.10 and Rs. 62,621,893 respectively.

1.17 FINANCIAL ANALYSIS

A detailed financial analysis is carried out from the investor's point of view. Total project cost including the interest during construction is PKR 2,461,709,999. Operation and maintenance cost has been considered during the thirty years including fixed & variable costs, water charges and insurance costs. Tariff structure is encountered as per 2002 Power Policy of Government of Pakistan and the results of analysis provide us a Leveliezed Tariff of 12.15 Rs/kWh which is outstanding under the circumstances. We have also considered a debt service in terms of loan from the banks and return on equity has been calculated accordingly as per NEPRA rules and regulations. However, the Sponsor has decided to opt for the Nepra's approved upfront tariff dated 14th October, 2015. Therefore, all prevailing norms forming upfront tariff has been considered.

IRR of the project is 12.59%. The evaluation criterion is to accept the project if it generates positive NPV and higher IRR than the discount rate proposed by sponsor of the project. Therefore, Sensitivity analysis is conducted to decide the acceptability of the project. The project has capacity to bear unexpected adverse changes in cost and revenue. The project can be developed as per NEPRA's upfront tariff.

1.18 CONCLUSIONS

- The construction of the Power Plant at RD 1+500 within New LCC (Main Canal) provides us maximum power and energy. It invoives the simpler construction methodology also.

- The installed capacity of the Power Plant is 7500 KW and mean annual energy is 44.15 GWh. The electricity shall be sold to National Grid.

- The Project is economically feasible and has the capacity to offset adverse change in variable and generate economic benefits. It offers good return for diverting scarce resources.

PROJECT CHRONOLOGY

TRIDENT POWER GR (PRIVATE) LIMITED
DEVELOPER OF 7.55 MW LCC HYDRO POWER PROJECT

1. **Project Detail:**

Project Company:	Trident Power GR (Private) Limited
Project Name:	LCC Hydro Power Project
Type of Generation:	Hydropower Plant/Run of Canal
Location of Generation Facility:	Lower Chenab Canal at RD 1+500, Khanki near Wazirabad, District Gujranwala
Installed Capacity:	7.55 MW
Plant Factor:	66.53%
Financing Structure:	20% Equity and 80% Debt
Project Lenders:	Pak Brunei Investment Company Limited
Power Purchaser:	Gujranwala Electric Power Co. (GEPCO)

2. **Project Back Ground:**

LOI Issuing Authority:	Punjab Power Development Board
LOI Issuance Date:	March 21, 2016
IEE Approval Date:	January 26, 2017
Interconnection Study Approval:	February 15, 2017
Feasibility Approval Date:	March 07, 2017
Letter of Consent by GEPCO:	August 28, 2017
Generation License Approval:	September 06, 2017
Upfront Tariff Application:	September 11, 2017
Revised Consent by GEPCO:	June 09, 2020
Revalidation of Interconnection Study by GEPCO:	January 08, 2020
Validation of Interconnection Study by NTDC:	July 22, 2020
Request for NOC from CPPA-G:	July 27, 2020

3. **Current Status:**

Tariff Petition filing to NEPRA: August 24, 2020 (expected)

4. **Future Steps:**

Tripart Energy Purchase agreement with PPIB and CPPAG
Water Usage Agreement with Irrigation Department
Land Lease Agreement
Implementation Agreement
Finalization of EPC Contractor
Financial Close

TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

	LCC HYDROPOWER PROJECT KEY AND SALEINT FEATURES	TRIDENT

A. MAIN DESIGN FEATURES

(i)	Plant Design Discharge	250 Cumecs
(ii)	Gross Head	3.6 meter
(iii)	Net Head	3.5 meter
(iv)	Total Installed Capacity	7.5 MW
(v)	Total auxiliary consumption	01%
(vi)	Net Installed Capacity	7.525 MW
(v)	Plant Factor based on net deliverable energy	66.53%
(vi)	Net deliverable energy	43.71 GWh

B. PROJECT MAJOR COMPONENTS

(i)	Powerhouse (Within Main Canal)	• Size: 32m X 42m • Bottom Pit Elevation: 689.3 ft. (210.15 m) • Loading Bay Elevation: 725.3 ft.(221.13 m) • Roof Slab Bottom Elevation: 757.3 ft. (230.89 m) • Hydraulic gates & Trashrack provided on u/s of powerhouse • Stoplogs provided on d/s of powerhouse • 20 Tons overhead travelling crane • Office building & control room • Spillway provided within the main canal within the same axis
(ii)	Electromechanical Equipments	• 04 Nos Kaplan Horizontal Pit Type Units • With rated output of 1875 KW each.

TRIDENT POWER GR (PRIVATE) LIMITED TRIDENT

		• Turbine Runner Dia: 3.46 m with rated & runway speed of 103.4 rpm & 323 rpm respectively. • 1.96 MVA Generator Capacity. • Transformer Capacity 1.96 MVA. • Draft Tube: L = 16.5 m; Exit width = 7.2 m; • Height = 5.2 m
(iii)	Accommodation for O&M Staff	• Operation & maintenance Staff Colony of 80m X 61m size.

C. Grid Interconnection Arrangement & Electrical Equipment

(i)	Concerned DISCO	MEPCO
(ii)	Status of Interconnection Study	Approved by MEPCO & NTDC
(vi)	Power Factor	0.85 Lagging; 0.9 Leading
(vii)	Generating Voltage	11 kV
(viii)	Generators	**Number** 4 **Capacity** 2.21 MVA **Total Capacity** 8.84 MVA **Nominal Voltage** 11 kV 11KV **Power factor** 0.85 0.85

TRIDENT POWER GB (PRIVATE) LIMITED
TRIDENT

		Excitation	Static
		Static	
		Frequency	50 Hz
		Efficiency	97%
			97 %
		Insulation Class	F
		Limit of Utilization	Class B
			Class B
		Connection	Y
		Y	
(ix)	Transformers (Main)	**Total No**	02
		Capacity	9MVA
		Primary Voltage	11 kV
		Secondary Voltage	132 kV
		Frequency	50 Hz
		Temperature rise	55 OC
		Vector group	YN d11
		Impedance	9 %
		Cooling	ONAF

a. Project Cost Assumptions

Following is the estimated capital cost of the project:

Description	USD Million
EPC Cost	19.27
Land Cost	0.16
Development Costs	1.12
Insurance during Construction	0.22
Lender's fee and Charges	0.67
Interest during construction (IDC)	1.34

TRIDENT POWER GR (PRIVATE) LIMITED TRIDENT

Total Project Cost	22.78

TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

No. PPDB/ 2 3 3 2016
PUNJAB POWER DEVELOPMENT BOARD
ENERGY DEPARTMENT
Irrigation Secretariat, Old Anarkali, Lahore
(Ph: 042-99213879 Fax: 042-99213885)

Date: 21 / 3 /2016

M/s Trident Power GR (Pvt.) Limited
359-H, Street # 4, Phase-V, DHA
Lahore

Subject: ISSUANCE OF LETTER OF INTEREST (LOI) FOR DEVELOPMENT OF 7.55 MW HYDROPOWER PROJECT ON LOWER CHENAB CANAL (LCC) AT RD. 0 + 000, DISTRICT GUJRANWALA

A Letter of Interest (the "LOI") was issued vide this office letter No. PPDB/377/2016 dated 21.03.2016 with four (4) months compressed timeline for completion of the Feasibility Study, to the Consortium comprising of following members.

(i)	**SPEC Energy DMCC**	**Main Sponsor**
(ii)	UNIK Fabrics (Pvt.) Ltd.	Member
(iii)	Trans Tech Pakistan	Member
(iv)	Automotive Spares and Accessories (Pvt.) Ltd.	Member

2. In accordance with the stipulations of Para-4(e) of the said LOI, your Company has recently submitted the Special Purpose Vehicle (SPV) in the name of **M/s Trident Power GR (Private) Limited**, having Memorandum and Articles of Association.

3. In this regard, it is intimated that in future, all the official correspondence will be made in the name of **M/s Trident Power GR (Private) Limited**.

Regards,

Managing Director
Punjab Power Development Board

CC:
1. The Chairman, NEPRA, Islamabad
2. The Chairman WAPDA, WAPDA House Lahore
3. The Secretary, Ministry of Water & Power, Islamabad
4. The Chief Executive Officer, Central Power Purchasing Agency (CPPA), Islamabad
5. The Chairman PPDB Board / Additional Chief Secretary, Government of the Punjab, Energy Department, Lahore
6. The Managing Director, Private Power & Infrastructure Board (PPIB), Islamabad
7. The Secretary, Government of the Punjab, Energy Department, Lahore
8. The Secretary, Government of the Punjab, Irrigation Department, Lahore
9. The Secretary, Government of the Punjab, Environement Protection Department, Lahore
10. The Chief Executive Officer, Gujranwala Electric Power Company (GEPCO), Gujranwala
11. The Chief Engineer (Power), Government of the Punjab, Energy Department, Lahore
12. The Chief Engineer, Irrigation Zone, Faisalabad
13. The Chief Executive Officer, Punjab Power Development Company (PPDCL), Lahore

No. PPDB/ 377 /2016

PUNJAB POWER DEVELOPMENT BOARD

ENERGY DEPARTMENT

Irrigation Secretariat, Old Anarkali, Lahore
(Ph: 042-99213879 Fax: 042-99213885)

Date: 21 / 03 /2016

M/s SPEC Energy DMCC
House # 56, Main Nazimuddin Road
Islamabad

Subject: LETTER OF INTEREST (LOI) FOR DEVELOPMENT OF 7.55 MW HYDROPOWER PROJECT ON LOWER CHENAB CANAL (LCC) AT RD. 0 + 000. DISTRICT GUJRANWALA

The Evaluation of Statement of Qualification (SOQ) submitted by M/s SPEC Energy DMCC, for 7.55 MW Raw Site HPP on Lower Chenab Canal (LCC) at RD. 0 + 000, District Gujranwala (the "Project") has been considered by PPDB Board during its 33rd meeting held on 18th November 2015 as per eligibility criteria laid down in the Punjab Power Generation Policy-2006 (Revised-2009) (the "Policy") and Pre-Qualification Documents (PQD) issued to your company.

2. After due diligence, the Board has unanimously decided to issue Letter of Interest (the "LOI"), with four (4) months compressed timeline for completion of the Feasibility Study, to the Consortium comprising of following members:

(i)	**SPEC Energy DMCC**	**Main Sponsor**
(ii)	UNIK Fabrics (Pvt.) Ltd.	Member
(iii)	Trans Tech Pakistan	Member
(iv)	Automotive Spares and Accessories (Pvt.) Ltd.	Member

3. In response to this Office letter No. PPDB/126/2016 dated 27.01.2016, your Company has submitted the Bank Guarantee # LG-08160020 amounting to Rs. 790,485/- (Rupees Seven Hundred & Ninety Thousand Four Hundred and Eighty Five only), issued on February 11, 2016 with the expiry date of January 10, 2017, by Askari Bank Limited, AWT Plaza, The Mall, Rawalpindi, in the name of M/s Trans Tech Pakistan.

4. Now, this LOI is being issued on behalf of Government of the Punjab (the "GoPb"), in terms of the provisions of the Policy. GoPb hereby confirms its interest in your proposal to conduct the feasibility study for the development of the Project subject to the following:

a. You are required to complete the Feasibility Study of the Project, at no risk and cost to, and without any obligation on the part of, the GoPb / PPDB and its agencies, within four (4) months from the date of issuance of this LOI.

b. You will not disturb the irrigation regime.

c. You will be provided with the available data / information regarding feasibility study of the Project. You are required to conduct the Feasibility Study; complete, at

internationally acceptable standards and in accordance with the terms and conditions stipulated in the Policy. The updated Feasibility Study must include an Environmental Impact Assessment Study, detailed design of power house, load flow and stability studies, design of interconnection / transmission lines, details pertaining to infrastructure, project cost, financing and, financing terms, tariff calculations and assumptions of financial calculations including economic / financial analysis. You are advised to liaise with the power purchaser while determining your plant size and site, project layout, transmission line and interconnection arrangements, etc.

d. You will carry out the Feasibility Study according to the specific milestones appended herewith at **Annex-A**, and submit monthly progress reports showing progress against these milestones.

e. You will establish a Special Purpose Vehicle (SPV) company and shall maintain the shares in this company in accordance with Para 39 & 40 of the Policy and will submit copy of Memorandum & Articles of Association as well as the Form 29 duly attested by the Securities & Exchange Commission of Pakistan (SECP). The shareholding in the said SPV must be reflected in accordance with the submitted SOQ.

f. PPDB will appoint a Panel of Experts (POE) to monitor the progress of Feasibility Study, verify attainment of the aforesaid milestones and to ensure implementation of the Project consistent with national and provincial needs.

g. The Main Sponsor will be liable for all obligations and liabilities of and on behalf of other Sponsors. Further processing of the Feasibility Study is subject to acceptance of GoPb in accordance with the Policy.

h. The validity of this LOI is four (4) months from the date of its issuance, where after, it will automatically be lapse with immediate effect. Issuance of this LOI or the lapsing of its validity, or your conducting a Feasibility Study there under, cannot form the basis of any claim for compensation or damages by the Sponsors or the project company or any party claiming through them against the GoPb / PPDB or any of its agencies, employees or consultants on any grounds whatsoever, during or after the expiration of its validity.

i. You are, therefore, required to complete the Feasibility Study for the said Project within the validity of this LOI. In case there is delay in completion of the Feasibility Study within the validity of this LOI, a one-time extension by PPDB Committee may be granted up to a maximum period of thirty (30) days, provided the Panel of Experts is satisfied that the Feasibility Study is being conducted in a satisfactory manner and is likely to be completed shortly. Furthermore, extension in validity of the LOI will only be provided upon submission of a bank guarantee in **double the original amount and valid beyond 180-days of the extended LOI period**.

j. In case, you fail to meet the relevant milestones and standards, PPDB will terminate this LOI and encash the Bank Guarantee due to non-performance.

k. This LOI has been issued in duplicate on the date hereof, and it shall come into effect when one copy hereof is received by PPDB after having been duly countersigned by you. Nevertheless, this LOI shall lapse if the countersigned copy is not received at PPDB within five (05) days of its issuance.

Regards,

SANIYA AWAIS
Managing Director

Accepted and agreed for & on behalf of:

Signature: _____

Date: _____

ENCL: *As stated above*

CC:

1. The Chairman, NEPRA, Islamabad
2. The Secretary to Chief Minister Punjab, Lahore
3. The Chairman WAPDA, WAPDA House Lahore
4. The Secretary, Ministry of Water & Power, Islamabad
5. The Chief Executive Officer, Central Power Purchasing Agency (CPPA), Islamabad
6. The Chairman PPDB Board / Additional Chief Secretary, Government of the Punjab, Energy Department, Lahore
7. The Managing Director, Private Power & Infrastructure Board (PPIB), Islamabad
8. The Chairman, Government of the Punjab, Planning & Development Department, Lahore
9. The Secretary, Government of the Punjab, Energy Department, Lahore
10. The Secretary, Government of the Punjab, Irrigation Department, Lahore
11. The Secretary, Government of the Punjab, Environement Protection Department, Lahore
12. The Chief Executive Officer, Gujranwala Electric Power Company (GEPCO), Gujranwala
13. The Chief Engineer (Power), Government of the Punjab, Energy Department, Lahore
14. The Chief Engineer, Irrigation Zone, Faisalabad
15. The Chief Executive Officer, Punjab Power Development Company (PPDCL), Lahore

No. PPDB

PUNJAB POWER DEVELOPMENT BOARD
ENERGY DEPARTMENT

Irrigation Secretariat

Date:

M/s Trident Power GR (Pvt.) Limited
359-H, Street = 4, Phase-V, DHA
Lahore

Subject: APPROVAL OF FEASIBILITY STUDY REPORT OF 7.55 MW HYDROPOWER PROJECT ON LOWER CHENAB CANAL (LCC) AT RD. 0 – 000, DISTRICT GUJRANWALA

A letter of Interest (LOI) was issued to M/s Trident Power GR (Pvt.) Limited (the "Sponsor") for development of 7.55 MW Hydropower Project on Lower Chenab Canal (LCC) at RD. 0–000, District Gujranwala (the "Project") in accordance with the Punjab Power Generation Policy-2009 (the "Policy") with the compressed timelines of four (4) months for completion of Feasibility Study Report (the "FSR"). The Panel of Experts (POEs), comprising of following members, was appointed by PPDB to monitor, review and approve the FSR of the Project being developed by the Sponsor:

1) The Managing Director, Punjab Power Development Board (PPDB), Lahore
2) The Managing Director, Private Power & Infrastructure Board (PPIB), Islamabad
3) Dr. Engineer Javed Yunas Uppal, Chairman EPDC, Lahore
4) The Chief Executive Officer, Gujranwala Electric Power Company (GEPCO)
5) The Project Director, Punjab Power Management Unit (PPMU), Lahore
6) The Superintending Engineer, LCC (East) Circle, Irrigation Department, Faisalabad

2. After thorough review of the FSR, the POE, vide its meeting held on 23rd August 2016, approved the said FSR subject to approval of Initial Environmental Examination Report (IEE) from Environment Protection Agency (EPA) and approval of Interconnection Study from Gujranwala Electric Power Company (GEPCO). During the meeting, the Sponsor submitted the undertaking to opt for upfront tariff. POE members shall certify the duly filled Performa (Annex-II) regarding net annual plant factor to apply for NEPRA's Upfront Tariff for Small Hydropower Generation Projects, notified by GoP, Ministry of Water & Power on March 28, 2016 (hereinafter refer to as "Upfront Tariff"). The POEs resolved that:

a. *The Feasibility Study Report of 7.55 MW Hydropower Project on Lower Chenab Canal (LCC) at RD. 0+000, District Gujranwala has been approved unanimously by POE subject to submission of approvals of IEE and Interconnection Study from the relevant Authorities.*

b. *In the final version of feasibility study report, the Sponsor shall include the undertaking that they unconditionally accept NEPRA's upfront tariff.*

c. *Prior to implementation of the Project, the sponsor is required to confirm the detailed design of the Project through Model Study at Irrigation Research Institute (IRI), Nandipur. The Sponsor shall also obtain NOC from Irrigation Department.*

3. The Sponsor has submitted the approval of IEE from EPA vide their letter dated 07.02.2017 and approval of Interconnection Study from GEPCO vide their letter dated 16.02.2017. Since the above conditions have been met with, the FSR of the Project stands approved.

4. In view of the above and relevant stipulations of the Policy, the Sponsor is required to approach National Electric Power Regulatory Authority (NEPRA) for grant of Generation License and acceptance of NEPRA's Upfront Tariff. The Upfront Tariff application must be in accordance with the terms & conditions of NEPRA's notified Upfront Tariff for Small Hydropower Generation Projects. A copy of duly signed & stamped complete set of final FSR is being enclosed herewith.

5. PPDB appreciates the Sponsor's efforts towards completion of FSR and hopes that the same pace and spirit would be kept by the Sponsor for timely completion of the Project to meet the energy needs of the country.

Regards.

SANIYA AWAIS
Managing Director

ENCL: *Complete set of stamped & signed Final Feasibility Study Report*

CC:

1. The Chairman PPDB Board / Additional Chief Secretary, Government of the Punjab, Energy Department, Lahore
2. The Managing Director, Private Power & Infrastructure Board (PPIB), Islamabad
3. The Chief Executive Officer, Gujranwala Electric Power Company (GEPCO), Gujranwala
4. The Project Director, Punjab Power Management Unit (PPMU), Lahore
5. Dr. Engr. Javed Yunas Uppal, Chairman EPDC, 1-A, Aibak Block, Garden Town Lahore
6. The Superintending Engineer, LCC (East) Circle, Irrigation Department, Faisalabad

No. PPDB/ 388 /2017
PUNJAB POWER DEVELOPMENT BOARD
ENERGY DEPARTMENT
Irrigation Secretariat, Old Anarkali, Lahore
(Ph: 042-99213879 Fax: 042-99212796)

Date: 08/03/2017

Annexure – I

The Registrar,
National Electric Power Regulatory Authority,
Islamabad

Subject: **RECOMMENDATION FOR GRANT OF UPFRONT TARIFF – 7.55 MW Hydropower Project (HPP) on Lower Chenab Canal (LCC) at RD. 0+000, District Gujranwala**

1. We hereby recommend Trident Power GR (Pvt.) Limited, for grant of upfront tariff, as approved by the National Electric Power Regulatory Authority *vide* its determination dated October 14, 2015, for its Hydropower Project of 7.55 MW installed capacity to be located on Lower Chenab Canal (LCC) at RD. 0+000, District Gujranwala.

2. We further confirm that our Panel of Experts has provided a certificate regarding net annual plant factor of Trident Power GR (Pvt.) Limited for its Hydropower Project of 7.55 MW installed capacity to be located on Lower Chenab Canal (LCC) at RD. 0+000, District Gujranwala on the prescribed format which is enclosed for consideration of the Authority.

Regards,

SANIYA AWAIS
Managing Director

ENCL: *As stated above*

Annexure – II

Date: March 07, 2017

The Registrar,
National Electric Power Regulatory Authority,
Islamabad

SUBJECT: - Certificate Regarding Annual Plant Factor

1. A Panel of Experts appointed by **Punjab Power Development Board (PPDB),** in respect of small hydropower project of **M/s Trident Power GR (Pvt.) Limited.**

2. Based on the proposed installed capacity and long term historical hydrological site data, our findings are as follows:

1	Name of the company	M/s Trident Power GR (Pvt.) Limited
2	Project Location / Address	Lower Chenab Canal (LCC) at RD. 0+000, Left Bank River Chenab, District Gujranwala
3	Design Discharge	250 m^3/sec
4	Gross head [meters]	3.6
5	Net head [meters]	3.5
6	Gross plant installed capacity [MW] - A	7.5 MW
7	Auxiliary consumption @ 1% - B	0.4415 GWh/annum
8	Net plant installed capacity [MW] - C = A - B (to be used for computation of net annual plant factor)	7.425 MW
9	Net deliverable energy per annum [GWh] - D	43.71 GWh/annum
10	Net annual plant factor based on net deliverable energy [(D x 1,000) / (C x 24 x 365) x 100]	66.53%

Monthly benchmark hydrology [m^3/s]:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
80.7	88.1	142.1	161.2	186.3	225.6	232.2	217.7	214.9	159.9	159.9	162.5	169.26

Monthly benchmark net deliverable energy [GWh]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1.87	1.78	3.22	3.55	4.2	5.02	5.26	4.89	4.88	3.56	3.59	3.69	45.51

3. We hereby confirm that the net annual plant factor as detailed above may be used for allowing upfront tariff, to the aforesaid company for the project site detailed above.

Mr. Munawar Iqbal
Director (Hydel)
Private Power & Infrastructure Board (PPIB)
Government of Pakistan

Dr. Engineer Javed Yunas Uppal
Chairman
Engineering Project Development Consultants

Representative of Project Director
Punjab Power Management Unit (PPMU)
Energy Department

Representative of Chief Executive Officer
Gujranwala Electric Power Company (GEPCO)

Representative of Superintending Engineer
LCC East Circle, Irrigation Department,
Faisalabad

Superintending Engineer
Lower Chenab Canal East Circl
Faisalabad

NOTE: *"Due to nature of data and resultant conclusion as described in the Feasibility Study of the Project, POE jointly and/or individually will not be responsible for reliability of data contents and its conclusion."*

GOVERNMENT OF THE PUNJAB
ENVIRONMENTAL PROTECTION AGENCY
National Hockey Stadium, Gate No. 10
Ferozepur Road, Lahore

NO. DD(EIA)/EPA/F-370(IEE)/1412/2016/ 103
Dated: 26/01/2017

To

Mr. Yousaf Mehboob Khan
Chief Executive Officer,
Trident Power GR (Pvt.) Limited.,
House # 159-H, Street # 4, Phase-5, DHA, Lahore Cantt.,
Lahore.

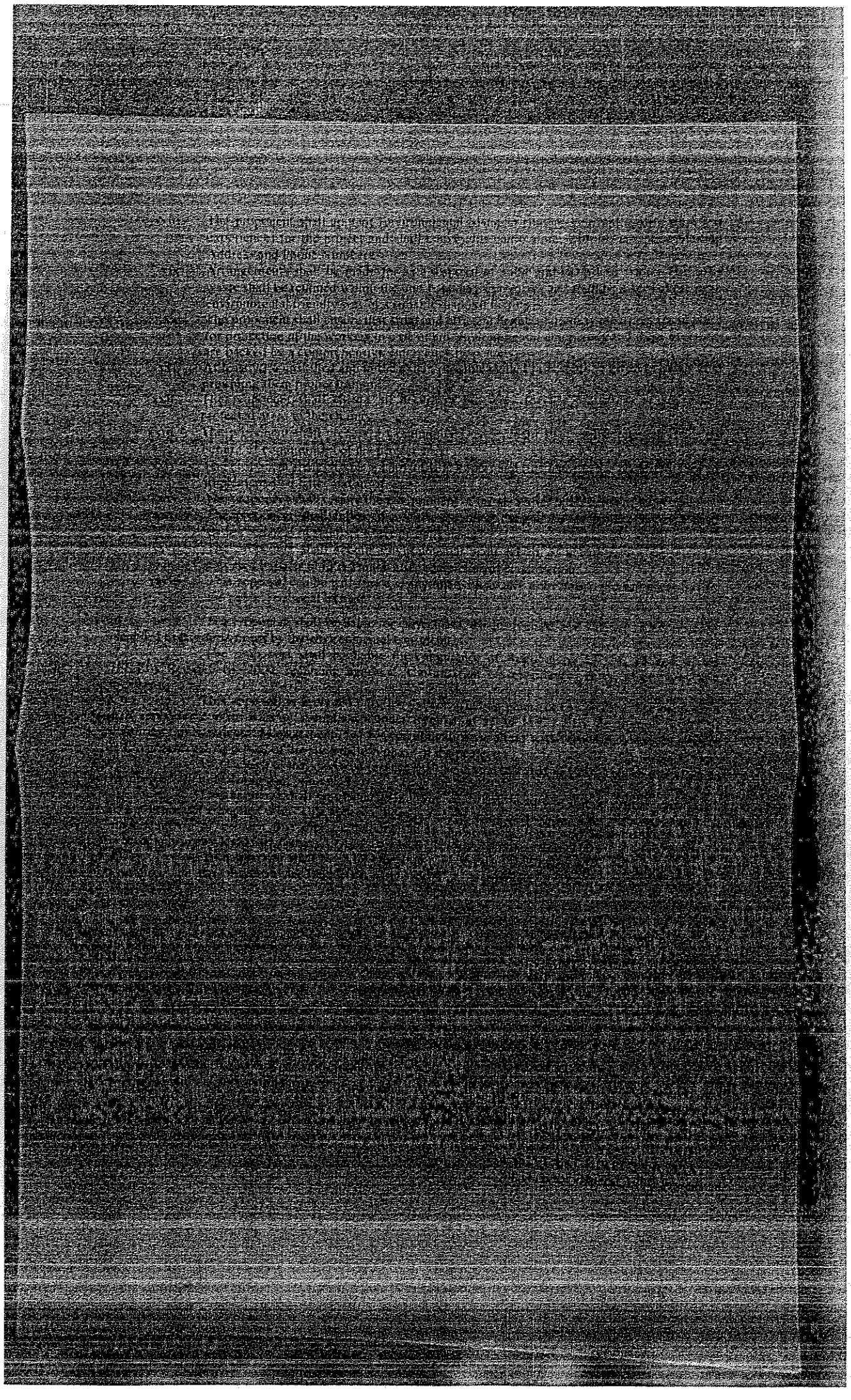
Subject: **DECISION OF EPA PUNJAB FOR THE PROJET "CONSTRUCTION OF 7.55-MW LOWER CHENAB CANAL HYDROPOWER PROJECT, GUJRANWALA"**

1.	Description of Project:	Construction of 7.55-MW Lower Chenab Canal Hydropower Project
2.	Location of Project:	New Khanki Barrage Tehsil Wazirabad District Gujranwala.
3.	Date of filing of IEE:	09.06.2016

4. EPA Punjab has reviewed the Initial Environmental Examination Report (IEE) and considered Site Inspection Report received from Deputy Director / Ex-District Officer (Environment), Gujranwala vide letter No. 544/DOE/GRW dated 22.08.2016. EPA Punjab has also considered the recommendations of **Committee of Experts** (Meeting dated 23.11.2016), recommendations of **EA Committee** (Meeting dated 14.12.2016) and other relevant record.

5. **Environmental Protection Agency, Punjab accords approval for construction / installation of your aforesaid project subject to the following conditions:**

i. The proponent shall ensure compliance of Punjab Environmental Quality Standards (PEQS).
ii. Mitigation Measures suggested in the IEE report and Environmental Management Plan (EMP) shall be strictly adhered to minimize any negative impacts on soil, ground water, air and biological resources of the project area.
iii. Monitoring shall be carried out during the entire period of the project activities. Monitoring reports of the whole operation shall be submitted to EPA, Punjab on quarterly basis.
iv. Camping sites shall be located at suitable distance away from any settlement to avoid disturbance to the local people. Sewage generated from camping sites shall be treated in septic tanks.
v. The proponent shall take measures to control dust and the area around the project site shall be kept clean.
vi. The proponent shall ensure efficient health and first aid treatment facilities for protection of workers.
vii. The proponent shall plant at least 10000 trees of minimum height 6-7 feet in consultation with the Deputy Director / Ex-District Officer (Environment) under intimation to this office.
viii. The proponent shall do proper landscaping after completion of the project.
ix. The construction material shall be piled / stored in such a way that it shall not destroy the flora / environment of the locality.
x. The proponent shall care about noise issues during construction and operation stage of the project.
xi. The objections / complaints of the locals / stakeholders (if any) shall be redressed on priority basis.
xii. The proponent shall provide compensation to the inhabitants in case of loss of agricultural land, crop, property, etc. in accordance with the rates that are agreed upon. All conflicting issues regarding compensation, etc. shall be settled amicably before the start of the project activities.
xiii. The proponent shall submit comprehensive map of the area showing each and every component of the project.
xiv. The proponent shall adopt all mitigation measures on scientific basis to minimize the effects on nearby community from the project activities.
xv. The proponent shall provide details of nearest human settlement and comprehensive layout of road network surrounding the project site.
xvi. The proponent shall provide the ultimate disposal of wastewater.
xvii. The proponent shall obtain NOC / clearance from all other concerned departments before commencement of work.



National Electric Power Regulatory Authority
(NEPRA)
Islamabad – Pakistan

GENERATION LICENCE

No. IGSPL/89/2017

In exercise of the Powers conferred upon under Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, the Authority hereby grants a Generation Licence to:

Trident Power GR (Private) Limited

Incorporated under Section-32 of the Companies Ordinance, 1984 having Corporate Universal Identification No. 0083313, dated April 01, 2013

for its Hydel Based Generation Facility Located on Lower Chenab Canal at RD 1+500 Tehsil Wazirabad, District Gujranwala in the Province of Punjab

(Installed Capacity: 7.50 MW Gross ISO)

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

Given under my hand this 6th day of September Two Thousand & Seventeen and expires on 14th day of February Two Thousand & Fifty.

06/09/17

Registrar

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

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-390/ 15173-80

September 6, 2017

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

Subject: **Generation Licence No. IGSPL/89/2017**
Licence Application No. LAG-390
Trident Power GR (Private) Limited (TPGPL)

Reference: TPGPL's application vide letter dated March 20, 2016, (received on March 22, 2016)

Enclosed please find herewith Generation Licence No. IGSPL/89/2017 granted by National Electric Power Regulatory Authority (NEPRA) to Trident Power GR (Private) Limited (TPGPL) for its 7.50 MW Hydel Generation Facility located on Lower Chenab Canal at RD 1+500, Tehsil Wazirabad, District Gujranwala, 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/89/2017)

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

06 09 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, ENERCON Building, Sector G-5/2, 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, Gujranwala Electric Power Company (GEPCO), 565/A, Model Town, G.T Road, Gujranwala
7. Chairman, Indus River System Authority (IRSA), Service Road South, 44100, Kashmir Highway, Islamabad

National Electric Power Regulatory Authority (NEPRA)

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

September 06, 2017
Case No. LAG-390

(A). Background

(i). Pakistan is primarily an agricultural country and to fulfill the water requirements of the said sector, a number of dams, link canals and head works have been built all over the country. A significant portion of the said network is located in the province of Punjab and offers a good hydel potential for generation of clean energy.

(ii). In order to tap the available resources for power generation in the province, the Government of Punjab (GoPb) has formulated a policy titled as Punjab Power Generation Policy 2006 (the "Punjab Power Policy"). Further, GoPb has set up Punjab Power Development Board (PPDB) as one window facilitator for private sector investment in the province. In this regard, PPDB has issued Letter of Intent (LoI) to different project developers/entrepreneurs for setting up hydropower projects on canals. One such LoI has been issued to consortium of companies led by SPEC Energy DMCC (the "main sponsor") under the Punjab Power Policy. The LoI envisaged development of approximately 7.50 MW hydropower plant on Lower Chenal Canal at RD 0+000, district Gujranwala, in the province of Punjab.

(iii). According to the terms and conditions of LoI, the sponsors of the project incorporated Special Purpose Vehicle (SPV) in the name of Trident Power GR (Private) Limited (TPGPL) and carried out the detailed feasibility study. After approval of the same, TPGPL decided to approach the Authority for the grant of generation licence.

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(B). Filing of Application

(i). TPGPL submitted an application on March 22, 2017 for the grant of generation licence in terms of Section-15 of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act") read with the relevant provisions of the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 (the "Licensing Regulations").

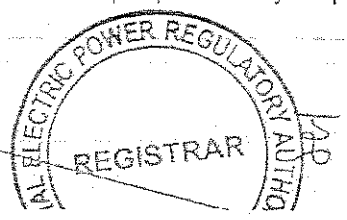
(ii). The Registrar examined the application to confirm its compliance with the Licensing Regulations and observed that the application lacked some of the required information/documentation. Accordingly, TPGPL was directed for submitting the missing information/documentation and the same was submitted on April 10, 2017. The Authority considered the matter 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 on May 04, 2017 for consideration of the grant of the generation licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority approved an advertisement to invite comments of general public, interested and affected persons in the matter as stipulated in Regulation-8 of the Licensing Regulations. Accordingly, advertisement was published in one (01) Urdu and one (01) English newspapers on May 06, 2017 respectively.

(iii). In addition to the above, the Authority approved a list of stakeholders for seeking their comments for assistance of the Authority in the matter in terms of Regulation-9(2) of the Licensing Regulations. Accordingly, letters were sent to different stakeholders as per approved list on May 08, 2017, soliciting their comments for the assistance of the Authority.

(C). Comments of Stakeholders

(i). In response to the above, the Authority received comments from two (02) stakeholders including Indus River System Authority (IRSA) and PPDB. The salient points of the comments offered by the said stakeholders are summarized below:-

(a). IRSA commented that the proposed hydropower plant of



TPGPL is run of canal and is being set up on Lower Chenab Canal, district Gujranwala in the province of Punjab. Therefore, the matter may be taken up with Irrigation department, Govt. of Punjab; and

(b). PPDB supported the grant of generation licence to TPGPL.

(ii). The Authority examined the comments of the above stakeholders and found the same supportive except the observations of IRSA. In this regard, the Authority observed that PPDB while issuing LoI to the company had already taken the Irrigation department on board and it did not express any reservation in the matter at that time therefore, the Authority considered it appropriate not to further refer the matter to Irrigation department, Govt. of Punjab.

(iii). In consideration of the above and having addressed the abovementioned comments/objections, the Authority considered it appropriate to proceed further in the matter of application of TPGPL for the consideration of grant of generation licence as stipulated in the Licensing Regulations and NEPRA Licensing (Generation) Rules, 2000 (the "Generation Rules").

(D). Evaluation/Findings

(i). The Authority has considered the submissions of TPGPL including the information provided in its application for the grant of generation licence. The Authority has also considered the feasibility study of the project, Grid Interconnection Study (GIS), provisions of the Punjab Power Policy, the relevant rules & regulations.

(ii). In consideration of the above, the Authority has observed that PPDB issued LoI to the consortium of (a). SPEC Energy DMCC (SPECED) (b). UNIK Fabrics (Private) Limited (UNIKFPL); (c). Trans Tech Pakistan; and (d). Automotive Spare and Accessories (Private) Limited (ASAPL). SPECED is a company of Dubai based SPEC Group of Dubai, UAE providing services in engineering, procurement, construction and commissioning contracts of various power projects. Trans Tech Pakistan (TRTP) is a multipurpose engineering concern, actively engaged in various infrastructure, railways, telecommunications, petroleum, food & beverages,

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY REGISTRAR

automobile and renewable energy projects in Pakistan since 1991. The group is part of different hydropower plants including 1100 MW Kohala. TRTP also incorporated SPV in the name of Trident Power GB (Private) limited for development of 4.60 MW hydropower plant to which the Authority has already granted generation licence (No. IGSPL/73/2017 dated January 05, 2017). The Authority has noted that the sponsors have a total assets of more than Rs. 5.0 billion. In consideration of the above, the Authority is satisfied that the sponsors have the financial and technical capability to implement the projects.

(iii). The Authority has observed that TPGPL is a private limited company incorporated on April 01, 2013 under Section-32 of the Companies Ordinance, 1984 (XLVII of 1984) having Corporate Universal Identification No. 0083313. The registered office of the company is located at Suit No. 8, Ground Floor, Evacuee Trust Complex, F-5/1, Islamabad. The business office of the company is situated at House No. 359 H, Street No. 4, Phase V, DHA, Lahore. The memorandum of association of the company, *inter alia*, includes the business of power generation as one of its business objects.

(iv). The Authority has observed that initially in 2011, NESPAK conducted the feasibility study of the proposed hydropower project located at RD 0+000. Later on, TPGPL engaged Aipel Consultants for reviewing and updating detailed feasibility study of the project. The scope of the feasibility study included the site investigations, infrastructure requirements, detailed design of power house, load flow & stability studies, Initial Environmental Examination, tariff calculation (including economic/financial analysis), term of financing and project cost etc. PPDB through its Panel of Experts approved the same with change in location of the project from RD 0+000 to 1+500.

(v). The Authority has noted that the TPGPL plans setting up a hydel based generation facility/Hydel Power Plant on Lower Chenab Canal at RD 1+500, 17 km south-east of Wazirabad, district Gujranwala in the province of Punjab. The said canal is emanating from left bank of new Khanki headworks on river Chenab. The total installed capacity of the proposed hydropower plant will be 7.50 MW, consisting of four (04) Pit type horizontal Kaplan turbines (of 1.875 MW each). The said hydropower plant will be run of

canal, having very low head with maximum design discharge of 250 m^3/s at variable head of up to 3.60 meters. The project will result in mean annual energy of 43.71 GWh at plant factor of 66.53%. The total cost of project will be around Rs. 2,461.71 million with a debt equity ratio of 75% and 25% of the project cost.

(vi). The Authority has observed that TPGPL carried out the required GIS for dispersal of electric power from the proposed generation facility/Hydel Power Plant. According to the said study, the dispersal of electric power will be made at 11 kV voltage level. The dispersal/interconnection arrangement will be consisting of three (03) 11 kV feeders [measuring about nine (09) kilometer on ACSR Osprey conductor] connecting the generation facility/Hydel Power Plant to 132/11 kV Ahmed Nagar grid station of Gujranwala Electric Power Company Limited (GEPCO). It is pertinent to mention that GEPCO has already approved the said dispersal/interconnection arrangement of the generation facility/Hydel Power Plant.

(vii). The Authority is encouraged that the proposed generation facility/Hydel Power Plant of TPGPL will be utilizing water which is RE source. However, the Authority has observed that the construction and operation of the proposed generation facility/Hydel Power Plant may cause some environmental concerns including soil pollution, water pollution and noise pollution. The Authority has observed that TPGPL carried out the required Initial Environment Examination Study and submitted the same for the consideration and approval of Environmental Protection Department, Government of Punjab (EPDGoPb). In this regard, the Authority is satisfied that EPDGoPb has issued No Objection Certificate (NOC) for the construction of the project.

(viii). In terms of Rule-3 of the Generation Rules, the Authority may grant a generation licence to any person to engage in the generation business. The said rule stipulates various conditions pertaining to the grant of generation licence as explained in Rule-3(2), Rule-3(3), Rule-3(5) and Rule-3(6) of the Generation Rules. In this particular case, the Authority has observed that conditions of Rule-3(2) and Rule-3(3) stands satisfied as TPGPL has provided details of location, technology, size, net capacity/energy yield, interconnection

arrangements, technical limits, technical functional specifications and other details specific to the generation facility/Hydel Power Plant. The Rule-3(5) of the Generation Rules stipulates that the Authority may refuse to issue a generation licence where the site, technology, design, fuel, tariff or other relevant matters pertaining to the generation facility/Hydel Power Plant proposed in an application for a generation licence are either not suitable on environmental grounds or do not satisfy the least cost option criteria. In this regard, the Rule-3(5) of the Generation Rules also stipulates the conditions pertaining to least cost option criteria which include (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/Hydel Power Plant 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/Hydel Power Plant 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 tariff resulting or likely to result from the construction or operation of the proposed generation facility/Hydel Power Plant; 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.

(ix). In consideration of the above, the Authority clarifies that the project will be utilizing clean and cheap resource (i.e. water) for power generation. The proposed generation facility/Hydel Power Plant is being developed in terms of the upfront tariff for small hydropower projects. Further, PPDB has made it obligatory for TPGPL to opt for upfront tariff determined by the Authority. It is pertinent to mention that the Authority through its determination No. NEPRA/UTH-01/4744-4746 dated April 02, 2015 announced a levelized upfront tariff for the future small hydropower projects of up to 25 MW. The said tariff works out to be Pak. Rs. 9.9960/kWh and Rs. 7.6177/kWh based on 100% local and foreign financing respectively which is very

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competitive considering the fact that not only cheap electric power will be generated but it will utilize the indigenous hydel potential.

(x). As explained in the preceding paragraphs, the sponsors of the project carried out the GIS which concludes that the project will not face any constraints in transmission system. Further, being located at reasonable distance from the thick population, the project will not result in costs and right-of-way issues for the provision of transmission and interconnection facilities. It is pertinent to mention that GEPCO has included the project in its mid and long-term forecasts for additional capacity requirements. In view of the clarification and justifications given above, the Authority is of the considered view that the project of TPGPL fulfills the eligibility criteria for grant of generation licence as stipulated in 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 and cheaper supply of energy/electricity. The costs of producing energy vary between different energy sources and technologies. A competitive energy mix will keep overall costs as low as possible given the available resources.

(ii). The existing energy mix of the country is heavily skewed towards thermal power plants, mainly operating on imported fossil fuel. In this regard, the Authority is of considered opinion that use of imported fossil fuel for power generation is not only an environmental concern but also creates pressure on the precious foreign exchange reserves of the country. Therefore, the Authority considers that in order to achieve sustainable development, it is imperative that all indigenous RE resources including hydel, wind, solar and other RE resources are given priority for power generation and their development is encouraged.

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(iii). The Authority considers that the proposed project of TPGPL is consistent with the provisions of Energy Security Action Plan 2005 which not only emphasizes the use of indigenous resources for power generation but also considers that RE resources are given priority in this regard. In consideration of the said, the Authority considers that 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 fuel but it will also help in reducing carbon emissions by generating clean electricity, thus improving the environment.

(iv). As explained in the preceding paragraphs, the Authority considers that TPGPL has provided the details of location, technology, size, net capacity/energy yield, interconnection arrangements, technical details and other related information for the proposed generation facility/Hydel Power Plant. In this regard, the Authority has observed that sponsors of the project will be utilizing around eighty five (85) acres of land for setting up the generation facility/Hydel Power Plant. In this regard, the Authority directs TPGPL that the aforementioned land shall be exclusively used for the proposed generation facility/Hydel Power Plant and any other generation activity cannot be carried out on this land except with the prior approval of the Authority.

(v). The term of a generation licence under 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. According to the information provided, the generation facility/Hydel Power Plant of TPGPL will achieve Commercial Operation Date (COD) on February 15, 2020 and will have a useful life of more than thirty (30) years from its COD. The applicant/TPGPL has requested that the term of the proposed generation licence may be fixed to thirty (30) years, in consistent with the term of the proposed Energy Purchase Agreement (EPA) to be signed with the power purchaser. The Authority considers that information provided by TPGPL about the useful life of generation facility/Hydel Power Plant and the subsequent request to fix the term of the generation licence is consistent with international benchmarks. Foregoing in view, the Authority fixes the term of the generation licence to thirty (30) years from its COD.

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(vi). Regarding the tariff, the Authority hereby clarifies that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate and charges etc. is its sole prerogative. In this regard, a specific article (i.e. Article-6) has been included in the generation licence. The Authority through Article-6 of the generation licence directs TPGPL to charge the power purchaser only such tariff which has been determined, approved or specified by it. Further, the Authority directs TPGPL to adhere to the Article-6 of the generation licence in letter and spirit without any exception.

(vii). As explained in the preceding paragraphs, TPGPL has already obtained NOC from EPDGoPb. Further, the Authority directs TPGPL to ensure that its project complies 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. Further, the Authority directs TPGPL 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 Authority observes that the proposed generation facility/Hydel Power Plant of TPGPL will be using RE 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. TPGPL has informed that the project will achieve COD by February 15, 2020 which is within the deadline of the Kyoto Protocol. In view thereof, an article (i.e. Article-14) for carbon credits and its sharing with the power purchaser has been included in the generation licence. In view of the said, the Authority directs TPGPL to initiate the process in this regard at the earliest so that proceeds for the carbon credits are materialized. TPGPL shall be required to share the proceeds of the carbon credits with the power purchaser as stipulated in Article-14 of the generation licence.

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

Authority:

Maj. (R) Haroon Rashid
(Member)

Syed Masood-ul-Hassan Naqvi
(Member)

Himayat Ullah Khan
(Member)

Saif Ullah Chattha
(Member/Vice Chairman)

Tariq Saddozai
(Chairman)

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
REGISTRAR
NEPRA

06.09.17

TRIDENT Trident Power GR (Pvt) Limited

RECEIVED
P.P.I.B
Date: 27-7-2020

July 27, 2020

RECEIVED
C.P.P.A-G, Islamabad

The Chief Executive Officer
Central Power Purchasing Agency Guarantee Limited
Shaheen Plaza, Plot # 73-West, Fazl-e-Haq Road,
Blue Area, Islamabad

CONSENT AND NO OBJECTION CERTIFICATE ON GEPCO'S CONSENT ENABLING CPPA-G TO PROCURE POWER FROM 7.55 MW (LCC) HYDROPOWER PROJECT ON LOWER CHANAB CANAL (LCC) AT RD. 1+500, DISTRICT GUJRANWALA

Dear Sir,

Please refer to the subject captioned and to the following letters:

1. GEPCO Letter No. 100637-40/MKT-S1 dated June 06, 2020
2. CPPA-G letter No. CPPA-G/CTO/DGM(Renewable)/SHPP/2031-38 dated January 28, 2020 and
3. To the Minutes of Meeting of Board of Directors of PPIB dated November 07, 2019 regarding way forward for revalidation of Power Acquisition Consent by related DISCOs.

The Board of Directors of GEPCO has approved and issued revised Power Acquisition Consent for the captioned project enabling CPPA-G to procure power from the said project (copy attached). In addition to this, GEPCO has also approved and revalidated the Grid Interconnection Study of the captioned project on January 08, 2020 (copy attached). NTDC has also vetted the Grid Interconnect Study on July 22, 2020 (copy enclosed).

In order to fulfill the requirements of PPIB directions, CPPA-G is requested to kindly issue Consent and NOC on revised consent from GEPCO at your earliest for further proceedings of the project.

Your cooperation and early response in this regard will be highly appreciated.

Warm Regards,

Tariq Mahmood
General Manager

c.c. Managing Director
Private Power & Infrastructure Board

Registered Office: Suite # 8, Ground Floor, Evacuee Trust Complex, F-5/1, Islamabad. Ph: +92-51-2870422-23 Fax: +92-51-2870424
Branch Office: House # 369-H, Street # 4, Phase 5, DHA, Lahore Cantt.

GUJRANWALA ELECTRIC POWER COMPANY LIMITED

Ph.#055-9201267 (308)
Fax:055-9200122
Email:mktgepco@gmail.com

OFFICE OF CHIEF EXECUTIVE OFFICER, GEPCO LTD.
565-A, MODEL TOWN GEPCO HEADQUARTERS G.T.ROAD GUJRANWALA
(MARKETING & TARIFF)

No. 100637-40 /Mkt.51 Dated 09 / 06 /2020

The Chief Executive Officer, CPPA-G
Shaheen Plaza Blue Area,
Islamabad.

Subject:- **DEVELOPMENT OF 7.55 MW HYDRO POWER PROJECT AT LOWER CHENAB CANAL(LCC)R.D.1+500 DISTRICT GUJRANWALA BY TRIDENT POWER GR(PVT) LIMITED (TPGPL)**

Ref: i) M/S TPGPL Letter No.Nil dated 26.02.2020 (Copy enclosed).
ii) M/S TPGPL Letter No.Nil dated 04.06.2020 (Copy enclosed).

It is apprised that M/S TPGPL has been developing the subject project on Lower Chenab Canal Tehsil Wazirabad District Gujranwala under Punjab Power Generation Policy 2006.

M/s TPGPL has requested vide above referred letter to revalidate the Power Acquisition Request. GEPCO has already issued to CPPA-G the Power Evacuation Certificate and the Consent to procure 7.55 MW Power from M/s TPGPL vide letter No.17687-89/MKT dated 28.8.2017 (copy enclosed) which is still valid.

Moreover Interconnection Study Report has also been vetted by Chief Engineer (Dev) PMU GEPCO vide his letter No.4457-58 dated 08.01.2020 (Copy enclosed).

Therefore you are requested to proceed further in the light of directions circulated by Private Power Infrastructure Board (PPIB) letter No.1(101) PPIB-Misc/19/PRJ/0-53805 dated 07.11.2019 and Power Procurement Guidelines, issued vide CPPA-G letter No. CPPA-G/CS/2016/1965 dated 31.05.2016.

D/A/As above.

CUSTOMER SERVICES DIRECTOR
GEPCO H/Q GUJRANWALA.

Copy to:-

1. The General Manager (Operation) GEPCO H/Q Gujranwala.
2. The Chief Engineer (Dev) PMU GEPCO H/Q Gujranwala with reference to above.
3. M/S Trident Power GR (PVT) Limited House No.359-H, Street No.04 Phase-5, DHA, Lahore Cantt:

GUJRANWALA ELECTRIC POWER COMPANY LIMITED

Ph# 055-9200519-26
Fax: 055-9200594
Email:cedevgepco@gmail.com

OFFICE OF CHIEF EXECUTIVE OFFICER, GEPCO LTD.
565-A MODEL TOWN GEPCO HEADQUARTERS G.T.ROAD GUJRANWALA
PROJECT MANAGEMENT UNIT

No. 4457-58 Dated 08/01/2020

M/s Trident Power GB (Pvt.) Ltd.,
H 359-H Street 4 Phase 5 DHA,
Lahore, Cantt.

Sub: GRID INTERCONNECTION ASSESSMENT (GIA) STUDIES OF 7.55 MW LOWER CHANAB CANAL (LCC) HYDRO POWER PRJOECT AT RD 0+000, KHANKI DISTRICT GUJRANWALA, PUNJAB.

Ref: i. Your office letter dated 28.11.2019.
ii. This office No. 3968-70 dated 06.12.2019.
iii. Your office letter dated 18.12.2019.

This office received revised final report of the subject cited power plant vide above referred letter(iii), after review of the report and electronic PSS/E study files, the contents of the subject study carried out from proposed 132KV Grid Station Ahmad Nagar are found appropriate. Therefore, the interconnection study report prepared by M/s ARCO Energy, for captioned Hydro Power Project of M/s Trident Power GR (Pvt.)Ltd., is approved as per assumptions and study results presented in the report subject to construction of 132KV proposed Ahmad Nagar Grid Station. In case of Non-construction of Grid Station, you will have to manage the dispersal of power through 132KV lines to keep the losses and voltage drop within limit permissible.

It is however, intimated that the subject report has been vetted only for interconnectivity aspect of the power plant and during Electricity Purchase Agreement (EPA), if there is any major change in the parameter used in the interconnection study, then study will have to be revised.

(Engr. Moin Sharif)
Chief Engineer (Dev) PMU
GEPCO, Gujranwala

1. M/s Arco Energy, Pakistan,515, Eden Tower, 82-E/1Main Boulevard, Gulberg III, Lahore
2. Master File.

National Transmission and Despatch Company Limited (NTDC)

General Manager (Power System Planning) NTDC

No. [illegible]

Dated: 22-07-2020

General Manager
Trident Power GR (Pvt.) Ltd.
House # 359-H, Street # 4, Phase 5, DHA,
Lahore Cantt.

Subject: Approval of Grid Interconnection Assessment (GIA) Report of 7.55 MW Lower Chanab Canal (LCC) Hydro Power Project (HPP) Khanki, Gujranwala, Punjab

Ref: (i) M/s Trident Power GR (Pvt) Ltd. office letter dated 05-06-2020.
(ii) M/s Trident Power GR (Pvt) Ltd. office letter dated 15-07-2020.

This office received the grid interconnection assessment (GIA) report of the subject 7.55 MW LCC HPP vide above referred letter (i). This office, after review, communicated the corrections needed in the GIA report to the consultant, M/s ARCO Energy, vide this office email dated 02-07-2020. The consultant re-submitted the GIA report in soft form on 13-07-2020 after incorporation of comments. During review, it was found that the consultant had not accommodated some of the comments of this office, which were communicated on 14-07-2020 vide this office email to the consultant. The consultant submitted the GIA report after incorporation of all the comments vide above referred letter (ii). Consequently, the final report, after review, is approved at NTDC end as per assumptions, study results and recommendations presented in the report.

It is intimated that the subject report has been approved only for the interconnectivity aspects of the subject HPP. Any commitment regarding induction of the subject 7.55 MW LCC HPP and/or for any other purpose shall be carried by GEPCO, CPPA-G and the relevant stakeholders.

(Sadiq Ullah)
General Manager (Power System Planning)

CC:

1. Managing Director (PPDB), 5th, Eden Tower, 82-E/1 Main Boulevard, Gulberg-III, Lahore.
2. Chief Technical Officer (CPPA-G), 73-West Blue Area, Shaheen Plaza, Fazal-e-Haq Road, Islamabad.
3. Dy. Managing Director (P&E), NTDC.
4. Registrar, NEPRA, Islamabad.
5. PS to Managing Director, NTDC.
6. ARCO Energy Pakistan, Office No. 2/5, Eden Tower, Main Boulevard, Gulberg III Lahore.
7. [illegible]
8. [illegible]

[illegible] Tel: +92-42-99202613, Fax: +92-42-36307738 [illegible]@ntdc.com.pk

SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN
COMPANY REGISTRATION OFFICE
1st Floor SLIC Building No.7, Blue Area,
Islamabad

Corporate Universal Identification No. 0083313

I hereby certify that TRIDENT POWER GR (PRIVATE) LIMITED is this day incorporated under the Companies Ordinance, 1984 (XLVII of 1984) and that the company is limited by shares.

Given under my hand at Islamabad this First day of April, Two Thousand and Thirteen.

Fee Rs. 12000/-

(Shaukat Hussain)
Additional Registrar of Companies

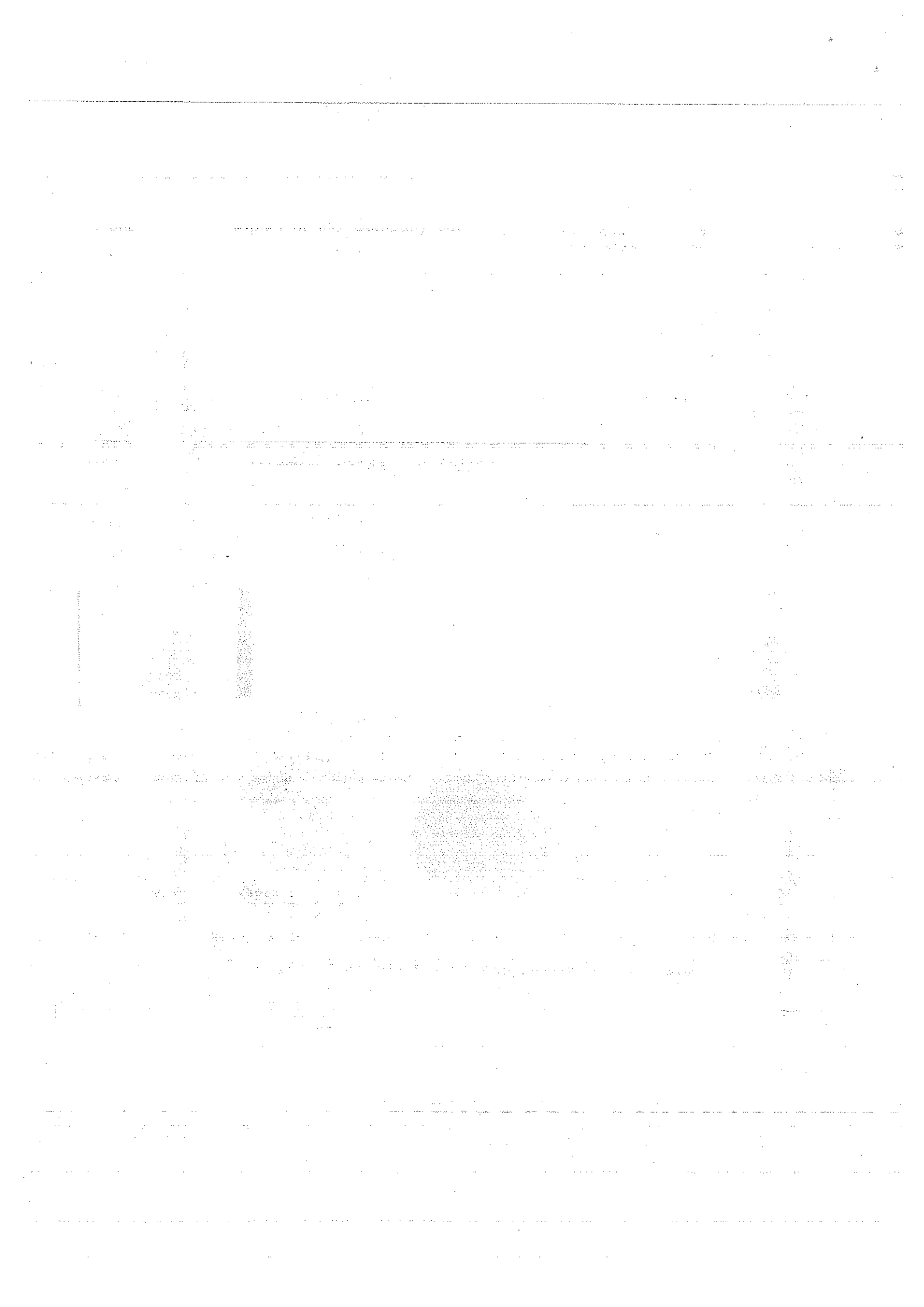
Company Registration Office Islamabad
SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

No. JRI 31698
Dated 1-4-13

CERTIFIED TO BE TRUE COPY

No. ADI 6438
Dated 19/2/2020

Assistant Registrar
Company Registration Office Islamabad



The Companies Ordinance, 1984

(Company Limited by Shares)

MEMORANDOM OF ASSOCIATION

Of

TRIDENT POWER GR (PVT.) LIMITED

I. The name of company is TRIDENT POWER GR (PVT.) LIMITED

II. The Registered office of the company will be situated in Islamabad Capital Territory.

III. The objects, for which the company is established are:-

1. To carry on all or any of the businesses of generating, purchasing, importing, transforming, converting, distributing, supplying, exporting and dealing in electricity and all other forms of energy and products or services associated therewith and of promoting the conservation and efficient use of electricity and to perform all other acts which are necessary or incidental to the business of electricity generation, transmission, distribution and supply.

2. To locate, establish, construct, equip, operate, use, manage and maintain Hydel, solar thermal power plants, coal fired power plants, power grid station, transforming, switching, conversion, and transmission facilities, grid stations, cables, overhead lines, sub-stations, switching stations, tunnels, cable bridges, link boxes, heat pumps, plant and equipment for combined heat and power schemes, offices, computer centers, shops, dispensing machines for pre-payment cards and other devices, showrooms, depots, factories, workshops, plants, printing facilities, warehouses and other storage facilities.

3. To purchase or otherwise acquire, produce, manufacture, refine, treat, purify, blend, reduce, distil, store, transport, market, distribute, supply, sell and otherwise dispose of and generally trade in any and all kinds of petroleum and petroleum products, oils, gas, hydrocarbons, petrochemicals, asphalt, bituminous substances and the products and by- products which may be derived, produced, repaired, developed, compounded, made or manufactured there from and or acquire and take over any firm likely to be running business of alike nature with or without assets, liabilities, rights, privileges, goodwill, registration, trade mark, import and export registration of any kind of facilities.

4. To carry on the business of oil and petroleum, fabricate, contract, erect, lay, and manufacturers of plant, machinery and apparatus for oil and petroleum, gas and chemical installations and to purchase or otherwise acquire, produce, manufacture, refine, treat, purify, blend, reduce, distil, store, transport, market, distribute, supply, sell and otherwise dispose off and generally trade in any and all kinds of petroleum and petroleum products.

5. To carry on the business as petroleum engineers, providing consultancy services, preparation of feasibilities for all sorts of petroleum related industries and to manufacture, buy, sell, import, export and to deal in all sorts of oil field equipments.

6. To carry on in or outside Pakistan the business of manufacturers, importers, exporters, indenters, transporters, dealers in all articles and commodities akin to or connected with any of the business of the Company capable of being conveniently carried on or necessary for the promotion of the objects herein contained, as permissible, under law.

7. To carry on the business of construction, erection and maintenance with all its ancillary services for or in respect of power house, bridges, roads, spillways, reservoirs, seaports, water supply, apartments, multi-story flats, business offices, markets, warehouses, industrial and commercial building.

8. To carry on the business of all kind of goods, commodities and merchandise as agents, selling agents, buying agents, publicity agents, brokers, commission agents, indentures, indenting agents, canvassers, advertisers for any person, firms, companies, corporations, government and/ or government sponsored corporations (including but without prejudice to the said generality and in particular for importers, exporters, buyers, sellers, manufacturers, merchants, tradesmen, and to carry on the business of importers, exporters of all kind of goods commodities and merchandise from and to all countries of the world, and develop business including the appointment of sale agents or representatives in any part of the world.

9. To carry on the business of general order suppliers including Government, Semi-Government Agencies, Armed Forces, Army, Military or Defense and commission agents, indenters, traders and as general merchants, wholesalers, retailers, dealers, distributors, stockiest agents, sub-agents in any goods or products or within the scope of the object of the Company and subject to any permission required under the law.

10. To apply for, tender, offer and accept purchase or acquire any contracts and concessions for or in relation to the projection execution, carrying out improvements, management, administration or control of works and conveniences and undertake, execute, dispose of or otherwise turn to account the same.

11. To establish and manage branches, zonal, divisional and sub offices and to appoint representatives of the company or its allied associated concerns anywhere in Pakistan or in foreign countries.

12. To go in for, buy or otherwise acquire and use any patent design, copyright, licenses, concession, convenience, innovation, invention, trade marks, or process, rights, or privileges, plants, tools or machinery and the like in Pakistan or elsewhere, which may for the time being appear to be useful or valuable for adding to the efficiency or productivity of the Company's work or business, as permissible under the law.

13. To carry out joint venture agreements with other companies or countries within the scope of the objects of the Company.

14. To import, export, invent, design, develop, produce, manufacture, assemble, test, install, maintain, renovate, refurbish, recondition, utilize operate, manage, acquire, sell, hire out, supply and otherwise deal in plant, equipment and apparatus for the business of the company.

15. To do the business of importing, exporting, simple & heavy machinery, technology uses for the company's business and any other business.

16. To provide for the benefit of other persons consultancy, advisory, training and management services , including but not limited to IT, Finance and Telecom Sectors, concerning or connected with anything that the company does in the exercise of its power or has power to do, or in which the company has gained or developed expertise in the course of its business, and to provide training and educational courses, documentation and material for employees of the company and for other persons in matters which in the opinion of the company and for other persons in matter are connected with, of concern or are of benefit to, the business and activates of the company or which utilize the company's communications systems or services.

17. To pay all costs, charges, and expenses preliminary or incidental incurred in formation or about the promotion and establishment of the Company and to remunerate any person, firm or company for services rendered or to be rendered in or about the formation or promotion of the Company or the conduct of its business.

18. To grant pensions, allowances, gratuities and bonuses to employees of the Company or any of them or the dependants of all or any of the employees and to subscribe to any labor, industrial, charitable or other institutions, clubs, societies

19. To create any Reserve fund, sinking fund, Insurance fund or any special or other funds whether for depreciation or for repairing, improving, extending or maintaining

any of the property of the Company or for redemption of debentures/ventures or redeemable preference shares or for other purpose or purposes conducive to the interest of the Company.

20. To apply for and obtain necessary consents, permissions and licences from any government, state, local and other authorities for enabling the Company to carry on any of its objects into effect as and when required by law.

21. To distribute all or any of the property of the company among the members in specie or kind but so that no distribution amounting to a reduction in capital is made without sanction of the court where requisite.

22. To do all or any of the above acts and all such acts as are incidental or may be thought conducive to the attainment of the above objects or any of them, and as agents, contractors, trustees or otherwise and either alone or in conjunction with others with the intention that the objects set forth in each of the several paragraphs of this memorandum shall be in no way limited or restricted by reference to or by inference in terms of any other paragraph of this memorandum.

23. It is undertaken that the Company shall not by advertisement, pamphlets or through other means, offer for sale or take advance money for the further sale of plots, houses, flats etc., to the general public or individuals.

24. Notwithstanding anything stated in any object clause, the Company shall obtain such other approval or license from the competent authority, as may be required under any law for the time being in force, to undertake a particular business.

25. It is declared that notwithstanding anything contained in the foregoing object clauses of this Memorandum of Association nothing contained therein shall be construed as empowering the Company to undertake or to indulge in business of banking company, leasing, investment, managing agency, insurance business, any of the NBFC business, multi-level marketing (MLM), Pyramid and Ponzi Scheme, commodity, future contract or share trading business locally or internationally, directly or indirectly as restricted under the law or any unlawful operation.

IV. The liability of the Member is Limited.

V. The Authorize Share Capital of the Company is Rs. 20,00,000/- (Rupees Two Million only) divided into 20,000 ordinary shares of Rs.100/-(Rupees Hundred only) each with powers to the company from time to time to increase and reduce its capital subject to any permission required by law.

We the several persons, whose names and addresses are subscribed below are desirous of being formed into a Company in pursuance of the Memorandum of Association and we respectively agree to take the number of shares in the capital of the Company set opposite to our respective names:-

Name and surname (present & former) in full (in Block Letters)	NIC No. (in case of foreigner, Passport No)	Father's/ Husband's Name in full	Nationality with any former Nationality	Occupation	Residential Address in full	Number of shares taken by each subscriber	Signatures
FIAZ AHMED	61101-1916032-5	HAKIM JAN	PAKISTANI	BUSINESS	MARGALA ROAD, HOUSE 60, SECTOR F-8/2 ISLAMABAD	25	
YOUSAF MEHBOOB KHAN	61101-1916030-3	MEHBOOB ALI KHAN	PAKISTANI	BUSINESS	HOUSE NO 3, STREET NO 1 SECTOR F-6/3 ISLAMABAD	25	
ZAFAR IKRAM SHEIKH	31101-7738774-7	SHEIKH IKRAM UD DIN	PAKISTANI	BUSINESS	HOUSE NO 01 BLOCK 14 BALDIA ROAD BAHAWALNAGAR	26	
SYED HADI ALI RIZVI	42201-6153104-1	SYED ALI AKBAR RIZVI	PAKISTANI	BUSINESS	IBHRAHAM REHMAT ULLAH ROAD HOUSE NO B-81 MO[illegible] K.D.[illegible] A [illegible]	24	
			Total number of shares to be [illegible]			10[illegible]	

Dated: The 11th day of March 2013

National Institutional Facilitation Technologies Pvt. Ltd.

5th Floor, AWT Plaza I.I. Chundrigar Road, Karachi, Pakistan

Company Registration Office Islamabad
SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN
SECP

CERTIFIED TO BE TRUE COPY

Assistant Registrar
Company Registration Office Islamabad

No. AD________

Dated ________

THE COMPANIES ORDINANCE, 1984
(COMPANY LIMITED BY SHARES)

ARTICLES OF ASSOCIATION

OF

TRIDENT POWER GR (PVT.) LIMITED

1. TRIDENT POWER GR (PVT.) LIMITED is established as a private Company with limited liability in accordance with and subject to the provisions of the Companies Ordinance, 1984 and accordingly the following provisions shall have effect, namely:

   (a) The numbers of the members for the time being of the Company (exclusive of persons who are for the time being in the employment of the Company), is not to exceed to fifty but when two or more persons hold one or more shares in the company jointly they shall, for the purpose of this paragraph, be treated as a single member;

   (b) Any invitation to the public to subscribe for any shares or debentures or debenture stock of the Company is hereby prohibited.

   (c) The right to transfer shares of the Company shall be restricted in manner hereinafter appearing,

2. The regulations contained in Table "A" in the First Schedule to The Companies Ordinance, 1984 shall apply to the Company, subject to the articles hereinafter provided.

INTERPRETATION

3. In these Articles unless there is something in the subject or context inconsistent therewith:

   (i) "The Company" means the above named Company.

   (ii) "The Ordinance" means the Companies Ordinance, 1984, or any statutory modification or re-enactment thereof for time being in force in Pakistan;

   (iii) "The Directors" means the Directors for the time being of the Company or the Directors assembled at a Board;

   (iv) "Month" means a calendar month;

   (v) "The Office" means the Registered Office for the time being of the Company;

   (vi) "The Seal" in relation to a Company means the common Seal of the Company;

   (vii) "Writing" shall include printing and lithography and any other mode or modes representing or reproducing words in a visible form.

(viii) Words importing the singular number only shall include the plural number and vice versa;

(ix) Words importing the masculine gender only shall include the feminine gender;

(x) Words importing persons shall include corporations.

(xi) Subject as aforesaid any words or expressions defined in the Ordinance; shall except where the subject or context forbids bear the same meaning in these Articles.

CAPITAL

4. The Authorize Share Capital of the Company is Rs. 20,00,000/- (Rupees Two Million only) divided into 20,000 ordinary shares of Rs.100/-(Rupees Hundred only) each with powers to the company from time to time to increase and reduce its capital subject to any permission required under the law.

5. The shares shall be under the control of the Directors who may allot or otherwise dispose off the same to such persons, firms or corporation on such terms and conditions and at such times, as they may deem fit.

6. Transfer of shares shall not be made or registered without the previous sanctions of the Directors if registration of shares is refused, the Directors shall within one month from the date when instrument of transfer was lodged send notice of refusal to the transferee and the transferor.

7. An instrument of share transfer must be accompanied by the certificate of shares sought to be transferred thereby.

GENERAL MEETINGS

8. An annual General meeting, of the Company shall be held within eighteen months from the date of it's incorporation and thereafter once at least in every calendar year within four months following the close of its financial year at such time and place as the Directors may determine, provided however, that no greater interval than fifteen months shall be allowed to elapse between two general meetings.

9. The above mentioned meeting shall be called Annual General Meetings. All other general meetings shall be called extraordinary general meeting.

PROCEEDINGS AT GENERAL MEETING

10. At least Twenty-One days' notice of any General Meeting specifying the place, day and the hour of meeting and, in case of special business, the general nature of such business shall be given to members in manner hereinafter mentioned or in such other manner as may from time to time be prescribed by the Company in General Meeting. The accidental omission to give any such notice to or the non-receipt of any such notice by any member shall not invalidate the proceedings at any General Meeting or any resolution passed thereat.

11. The business of an Annual General Meeting shall be to receive and consider the profit and loss account, the balance sheet and the reports of the directors and auditors, to declare dividend, to elect the directors and to appoint and fix the remuneration of the auditors.

and to transact any other business which under these presents ought to be transacted at an Annual General Meeting and all business transacted at an Extraordinary General Meeting shall be deemed special.

12. Two members present in person who represent not less than twenty five percent of the total voting power either of their own account or as proxies shall constitute quorum for a General Meeting.

13. No business shall be transacted at any General meeting unless the requisite quorum shall be present at the commencement of business.

14. At every General Meeting the Chairman appointed b y the Directors as the Chairman of the Meeting shall take the Chair, but if there be no such chairman or he be not presents within fifteen minutes after the time appointed for the meeting or is unwilling to act as Chairman, the members present shall choose a Director as Chairman and if none of the Directors be present, or willing to act as Chairman, the members present shall choose from one of their members, to be Chairman of the Meeting.

15. If within half an hour from the time appointed for the holding of a General Meeting the requisite quorum be not present, the meeting, if convened on the requisition of or by members, shall be dissolved and in every other case, it shall stand adjourned to the same day in the next week at the same hour and place, and, if at such adjourned meeting the requisite quorum be not present within half an hour from the time appointed for the meeting, two members present in person shall constitute a quorum and may transact the business for which the meeting was called.

16. The Chairman with the consent of the meeting may adjourn any General Meeting from time to time and from place to place but no business shall be transacted at any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place and which might have been transacted at that meeting.

17. Every question submitted to any General Meeting shall be decided in the first instance by a show of hands and in the case of equality of votes the Chairman shall, both on a show of hands and at the poll have a casting vote in addition to the vote or votes to which he may be entitled as a member.

VOTES OF MEMBERS

18. Upon a show of hands every member holding ordinary shares present in person or by proxy or attorney or in case of corporation under section 162 of the Ordinance shall have one vote except for election of Directors in which case, the provisions of section 178 of the Ordinance shall apply and upon a poll every member present in person or by proxy or attorney or by representative under section 162 of the Ordinance shall have votes proportionate to the paid up value of the shares carrying voting rights held by such member.

19. (a) Votes may be given, either personally or by proxy or attorney or representative subject to the provisions of the Ordinance

(b) No person shall be appointed a proxy who is not a member of the Company and qualified to vote save that a corporation or an organization being a member

the Company may appoint as its representative any person whether a member of the Company or not. An attorney of a member need not himself be a member.

20. The instrument appointing a proxy, and every power of attorney or other authority (if any) under which it assigned, or a notarially certified copy of that power of authority shall be deposited a the registered office of the Company, not less than 48 hours before the time for holding the meeting. Otherwise the instrument of proxy shall not be treated as valid.

DIRECTORS

21. The number of directors shall not be less than two nor more than nine.

22. The persons hereinafter named shall be the first directors and they shall hold the office upto the First Annual General Meeting.

    (1) FIAZ AHMED

    (2) YOUSAF MEHBOOB KHAN

    (3) ZAFAR IKRAM SHEIKH

    (4) SYED HADI ALI RIZVI

23. A Director may, with the approval of the directors, by notice in writing under his hand appoint any person to be an alternate director during his absence of not less than three months from Pakistan, and such appointment shall have effect and such appointee, whilst he holds office as an alternate director, shall be entitled to notice of meeting of directors, and to attend and vote thereat accordingly, but he shall ipso facto vacate office if and when the appointer returns to Pakistan or vacates office as Director, or removers the appointee from office by notice in writing under his hand.

24. The Directors shall subject to clause 21 hereof fix the number of Directors to comprise the Board of Directors at least 35 days before the convening of General Meeting at which election of directors is to take place.

25. The directors shall have power to fill a casual vacant but so that the total number of directors shall not at nay time exceed the maximum number fixed in clause 24 hereof. But any Director appointed in a casual vacancy shall hold office only for the remainder of the term of the director in whose place he is appointed and shall then be eligible for re-election.

26. A Director must be a member of the Company except where the director is a nominee of a corporation or an organization, which is a member of the Company.

27. The remuneration of every director shall be such sum not exceeding Rs 500/- for every meeting of the Board attended by him, as may from time to time be fixed by the Board.

28. If any Director be willing is called upon to perform extra services (which expression shall include [illegible] by a Director as a member of any committee formed by the Directors), or to [illegible] exertion in going or residing abroad, or otherwise for any of the purposes of the Company, the directors may remunerate such director as may b determined by the Directors.

29. The continuing directors may act not withstanding any vacancy in their body, but so that if the number falls below the minimum fixed above, the Directors shall not except in emergencies or for the purposes of filling vacancies act so long as the number remains below the minimum.

ELECTION OF DIRECTORS

30. At the first annual general meeting of the Company, the whole of the directors shall retire from office

31. A director shall hold office for a period of three years, unless he earlier resigns, becomes disqualified from being a Director or otherwise ceases to hold office.

32. A retiring director shall be eligible for re-election

33. The company at the annual general meeting at which a director retires in manner aforesaid may fill up the vacated office by electing a person thereto as provided in the Ordinance.

MANAGING DIRECTOR

34.

(a) The directors shall within fifteen days of the incorporation of the Company appoint any individual to be the Chief Executive, hereinafter called the Managing Director, of the company, to hold office till the holding of the first annual general meeting, unless the earlier resigns or otherwise ceases to hold office.

(b) within fourteen days of election of Directors under the preceding Articles or the office of Chief Executive falling vacant, as the case may be as prescribed by section 199 of the Companies Ordinance, 1984, the directors shall appoint any individual, including an elected director, to be the Managing Director of the Company for a period not exceeding three years on such terms and conditions as the Directors deem fit.

(c) On the expiry of the term of his office, the Managing Director shall be eligible for reappointment.

35. The directors of a company by resolution passed by not less than three fourth of the total number of directors for the time being, or the company by a special resolution may remove the managing director before the expiry of his term of office notwithstanding anything contained in the articles or in any agreement between the company and the managing director.

36. The remuneration of Managing Director shall from time to time be fixed by the Directors and may be by way of fixed salary or by any other mode.

37. The directors may from time to time entrust to and confer upon the Managing Director for the time being such of powers as they may think fit and may confer such powers for such time and to be exercised for such objects and purposes and upon such terms and condition s and with such restrictions as they think expedient and may from time to time revoke, withdraw alter or vary all or any of such powers.

PROCEEDINGS OF DIRECTORS

38. The directors may meet together for the dispatch of business, adjourn and otherwise regulate their meetings and proceedings, as they think fit, and may determine the quorum necessary for the transactions of the business. Until otherwise determined two Directors shall be a quorum.

39. A director may, at any time, convene a meeting of directors. A Director who is at any time not in Pakistan shall not during such time be entitled to notice of any such meeting.

40. Questions arising at any meeting shall be decided by a majority of votes, and in case of an equality of votes, the Chairman shall have a second or casting vote.

41. The directors may elect as chairman of their meetings and determine the period for which he is to hold office; and unless otherwise determined, the chairman shall be elected annually. If no such chairman is elected, or if at any meeting the chairman is not present within ten minutes after the time appointed for holding the same or is unwilling to act as chairman, the directors present shall choose one of their numbers to be chairman of the meeting.

42. A meeting of directors for the time being at which a quorum is present shall be competent to exercise all or any of the authorities, powers and discretions by or under the Articles of the Company for the time being vested in or exercisable by the directors generally.

43. The Directors may delegate any of their powers not required to be exercised in their meeting to committees consisting of such member or members of their body as they think fit and may from time to time revoke such delegation. Any committee so formed shall in the exercise of the powers delegated, conform to any restrictions that may from time to time be imposed upon it by the Directors.

44. The meeting and proceedings of any such committee of two or more members shall be governed by the provisions herein contained for regulating the meetings and proceedings of the directors so far as the same are applicable thereto, and are not superseded by any regulations made by the directors under the last preceding clause.

45. All acts done by any meeting of the Directors or by a committee of directors or by any person acting as a director shall notwithstanding that it shall afterwards be discovered that there was some defect in the appointment of such directors or persons acting as aforesaid or that they or any of them were disqualified be as valid as if every such persons had been duly appointed and was qualified to be a director.

46. A resolution in writing signed by all the directors for the time being present in Pakistan, shall be valid and effectual as if it had been passed at a meeting of the directors duly called and constituted.

MINUTES

47. (a) The directors shall cause a fair and accurate summary of the minutes of all proceedings of general meetings and meetings of its directors and committee of directors along with the names of those participating in such meetings, to be entered in properly maintained books.

(b) Any such minutes of any general meeting, or of any meeting of the directors or of any committee of the directors if purporting to be signed by the Chairman of such meeting, or by the chairman of the next succeeding meeting shall be receivable as prima facie evidence of the matter stated in such minutes.

POWERS OF DIRECTORS

48. The management of the business of the company shall be vested in the directors, and the directors may exercise all such powers and do all such acts and things as the company is by its articles of association or otherwise authorized to exercise and do and are not hereby or by statute directed or required to be exercised or done by the Company in general meeting, but subject nevertheless to the provisions of the Companies Ordinance, 1984 or to any of these presents and regulations being not inconsistent with the aforesaid provisions, as may from time to time be prescribed by the company in general meeting provided that no regulations made by the company in general meeting shall invalidate any prior act of the directors which would have been valid if such regulation had not been made.

BORROWING POWERS

49. The Directors may from time to time raise or borrow any sums of money for and on behalf the company from the members or other persons, Companies, firms or banks or they may themselves advance money to the company on such terms as may be approved by the directors.

50. The directors may raise and secure payment of such sum or sums of money in such manner and upon such terms and conditions in all respects as they think fit, and in particular by the issue of debentures or bonds or by mortgage or charge of all or any part of the property of the company.

THE SEAL

51. The directors shall provide for the safe custody of the seal and the seal shall never be used except by the authority of the Directors or a committee of directors previously given and in the presence of two directors who shall sign every instrument to which the seal is affixed.

ACCOUNTS

52. The directors shall cause true accounts to be kept in such form as they may decide for sums of money received and expended by the company and the mattes in respect of which such receipt and expenditure take place and of all sales and purchases of goods by the company and of the assets, credits and liabilities of the Company.

53. The books of account shall be kept at the registered office of the company or at such other place or places as the directors think fit.

54. The directors shall, from time to time, determine whether and to what extent and at what times and places, under what conditions or regulations the accounts and books of the company or any of them shall be opened to the inspections of the members (not being a director) and no member not being a director shall have any right of inspecting any account or book or document of the company except as conferred by law or authorized by the directors or by a resolution of the company in a general meeting.

AUDIT

55. Once at least in every year the accounts of the Company shall be examined and the fairness of profit and loss account and balance sheet ascertained by one or more auditor or auditors.

56. The first auditor of the company shall be appointed by the directors.

NOTICES

57. (a) A notice may be given by the company upon any member either personally or by sending it by post to him to his registered address or (if he has no registered address in Pakistan) to the address, if any, within Pakistan supplied by him to the company for the giving of notices to him.

(b) Where a notice is sent by post, service of the notice shall be deemed to be effected by properly addressing, prepaying and posting a letter containing the notice unless the contrary is proved, to have been effected at the time at which the letters would be delivered in the ordinary course of post.

58. Each holder of registered share whose registered place of address is not in Pakistan may from time to time notify in writing to the Company an address in Pakistan which shall be deemed his registered place or address within the meaning of the last preceding clause.

WINDING UP

59. If the company shall be wound up, whether voluntarily or otherwise the liquidator may, with the sanction of a special resolution, divide amongst the contributories in specie or kind, any part of the assets of the Company and may with the like sanction, vest any part of the assets of the Company in trustees upon such trusts for the benefit of the contributories, or any of them as the liquidator with the like sanction shall think fit.

INDEMNITY

60. Every director, manager, auditor, secretary, chief accountant and other officer or servant of the company shall be indemnified by the company against, and it shall be the duty of the directors out of the funds of the company to pay all costs, losses and expenses which any such officer or servant may incur or become liable to by reason of any contract entered into or thing done by him as such officer or servant or in any way in the discharge of his duties and the amount for which such indemnity is provided shall immediately attach as a lien on the property of the Company and have priority as between the members over all other claims.

No director, auditor or other officer of the company shall be liable for the acts, receipts, neglect or default of any other director or officer or for joining in any receipt or other act for conformity or for any loss or expenses happening to the company through the insufficiency or deficiency of title to any property acquired by order of the directors for or on behalf of the company or for the insufficiency or deficiency of any security in or upon which any of the money of the company shall be invested or for any loss or damage arising from bankruptcy, insolvency of [illegible] on with whom any moneys, securities or effects shall be deposited or for any loss occasioned by any error of judgment or oversight on his part or for any other damage [illegible] whatever which shall happen in the execution of the duties of his office or [illegible] thereto, unless the same happens through his own dishonesty.

We the several persons, whose names and addresses are subscribed below are desirous of being formed into a Company in pursuance of the Article of Association and we respectively agree to take the number of shares in the capital of the Company set opposite to our respective names:-

Name and surname (present & former) in full (in Block Letters)	NIC No. (in case of foreigner, Passport No)	Father's/ Husband's Name in full	Nationality with any former Nationality	Occupation	Residential Address in full	Number of shares taken by each subscriber	Signatures
FIAZ AHMED	61101-1916032-5	HAKIM JAN	PAKISTANI	BUSINESS	MARGALA ROAD, HOUSE 60, SECTOR F-8/2 ISLAMABAD	25	
YOUSAF MEHBOOB KHAN	61101-1916030-3	MEHBOOB ALI KHAN	PAKISTANI	BUSINESS	HOUSE NO 3, STREET NO 1 SECTOR F-6/3 ISLAMABAD	25	
ZAFAR IKRAM SHEIKH	31101-7738774-7	SHEIKH IKRAM UD DIN	PAKISTANI	BUSINESS	HOUSE NO 01 BLOCK 14 BALDIA ROAD BAHAWALNAGAR	26	
SYED HADI ALI RIZVI	42201-6153104-1	SYED ALI AKBAR RIZVI	PAKISTANI	BUSINESS	IBHRAHAM REHMAT ULLAH ROAD HOUSE NO B-81 MOHALLAH K.D.A SCHEME 1-A KARACHI EAST	24	
			Total number of shares to be taken			100	

Company Registration Office Islamabad
SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN
SECP

Dated: The 11th day of March 2013

National Institutional Facilitation Technologies Pvt. Ltd.

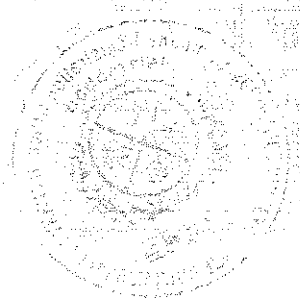
5th Floor, AWT Plaza I.I. Chundrigar Road, Karachi, Pakistan

CERTIFIED TO BE TRUE COPY

Assistant Registrar
Company Registration Office Islamabad

No. ADI 9

Dated



THE COMPANIES ACT, 2017
THE COMPANIES (GENERAL PROVISIONS AND FORMS) REGULATIONS, 2018
[Section 197 and Regulations 4 and 20]
PARTICULARS OF DIRECTORS AND OFFICERS, INCLUDING THE CHIEF EXECUTIVE, SECRETARY, CHIEF FINANCIAL OFFICER, AUDITORS AND LEGAL ADVISER OR OF ANY CHANGE THEREIN

FORM 29

PART-I

1.1 CUIN (Incorporation Number) 0083313

1.2 Name of Company TRIDENT POWER GR (PVT.) LIMITED

1.3 Fee Payment Details

1.3.1 Challan Number E-2019-1100906 1.3.2 Amount 400.0

PART-II

2. Particulars*:

2.1. New Appointment/Election

Present Name in Full (a)	NIC No. or Passport No. in case of Foreign National (b)	Father / Husband Name (c)	Usual Residential Address (d)	Designation (e)	Nationality** (f)	Business Occupation** (if any) (g)	Date of Present Appointment or Change (h)	Mode of Appointement / change (any other remarks (i)	Nature of directorship (nominee/indepe ndent/additional/ other) (j)
YOUSAF MEHBOOB KHAN	61101-1916030-3	MEHBOOB ALI KHAN	HOUSE NO. 3 , STREET NO. 1 , SECTOR F-6/3 ISLAMABAD	Chief Executive	Pakistan		28/10/2019	Re-Appointment	
ZAFAR IKRAM SHEIKH	31101-7738774-7	SHEKIH IKRAM UD DIN	HOUSE # 01 BLOCK 14 BALDIA ROAD BAHAWALNAGAR BAHAWALNAGAR	Director	Pakistan	BUSINESS	28/10/2019	Re-Elected	
FIAZ AHMED	61101-1916032-5	HAKIM JAN	MARGALA ROAD HOUSE NO 60 SECTOR F-8/2 ISLAMABAD ISLAMABAD	Director	Pakistan	BUSINESS	28/10/2019	Re-Elected	
SYED HADI ALI RIZVI	42201-6153104-1	SYED AKBAR ALI RIZVI	IBHRAM REHMAT ULLAH ROAD HOUSE NO B-81 MOHALLAH K.D.A SCHEME 1-A	Director	Pakistan	BUSINESS	28/10/2019	Re-Elected	
YOUSAF MEHBOOB KHAN	61101-1916030-3	MEHBOOB ALI KHAN	HOUSE NO 3, STREET NO 1 SECTOR F-6/3 ISLAMABAD ISLAMABAD	Director	Pakistan	BUSINESS	28/10/2019	Re-Elected	
ASIF ASSOCIATES, CHARTERED ACCOUNTANTS			2ND FLOOR, SAFDAR MANSION, 16-D EAST, FAZI-O-HAQ ROAD, BLUE	Auditor	Pakistan		28/10/2019	Re-Appointment	

2.2 Ceasing of Officer/Retirement/Resignation

Present Name in Full (a)	NIC No. or Passport No. in case of Foreign National (b)	Father / Husband Name (c)	Usual Residential Address (d)	Designation (e)	Nationality** (f)	Business Occupation** (if any) (g)	Date of Present Appointment or Change (h)	Mode of Appointement / change (any other remarks (i)	Nature of directorship (nominee/indepe ndent/additional/ other) (j)

Company Registration Office Islamabad
SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

2.3 Any other change in particulars relating to columns (a to (g) above

Present Name in Full (a)	NIC No or Passport No in case of Foreign National (b)	Father / Husband Name (c)	Usual Residential Address (d)	Designation (e)	Nationality** (f)	Business Occupation** (if any) (g)	Date of Present Appointment or Change (h)	Mode of Appointement / change / any other remarks (i)	Nature of directorship (nominee/independent/executive/other)

* In the case of a firm, the full name, address and above mentioned particulars of each partner and the date on which each became a partner
** In case the nationality is not the nationality of origin, provide the nationality of origin as well
*** Also provide particulars of other directorships or offices held, if any.
**** In case of resignation of a director, the resignation letter and in case of removal of a director, member's resolution be attached

PART-III

3.1 Declaration:

I do hereby solemnly, and sincerely declare that the information provided in the form is:
(i) true and correct to the best of my knowledge, in consonance with the record as maintained by the Company and nothing has been concealed and
(ii) hereby reported after complying with and fulfilling all requirements under the relevant provisions of law, rules, regulations, directives, circulars and notifications whichever is applicable

3.2 Name of Authorized Officer with designation / Authorized Intermediary	MR. MUHAMMAD ASIF CHUGHTAI Secretary
3.3 Signature	Electronically signed by MR. MUHAMMAD A
3.4 Registration No. of Authorized Intermediary, if applicable	
3.5 Date (DD/MM/YYYY)	28/10/2019

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Dated

2.3 Any other change in particulars relating to columns (a) to (g) above

Present Name in Full (a)	NIC No. or Passport No. in case of Foreign National (b)	Father / Husband Name (c)	Usual Residential Address (d)	Designation (e)	Nationality** (f)	Business Occupation** (if any) (g)	Date of Present Appointment or Change (h)	Mode of Appointement / change / any other remarks (i)	Nature of directorship (nominee/indepen dent/acolitional/oth er)

* In the case of a firm, the full name, address and above mentioned particulars of each partner, and the date on which each became a partner.
** In case the nationality is not the nationality of origin, provide the nationality of origin as well.
*** Also provide particulars of other directorships or offices held, if any ".
**** In case of resignation of a director, the resignation letter and in case of removal of a director, member's resolution be attached

PART-III

3.1 Declaration:

I do hereby solemnly, and sincerely declare that the information provided in the form is:
(i) true and correct to the best of my knowledge, in consonance with the record as maintained by the Company and nothing has been concealed and
(ii) hereby reported after complying with and fulfilling all requirements under the relevant provisions of law, rules, regulations, directives, circulars and notifications whichever is applicable

3.2 Name of Authorized Officer with designation / Authorized Intermediary: MR. MUHAMMAD ASIF CHUGHTAI Secretary

3.3 Signature: Electronically signed by MR. MUHAMMAD A

3.4 Registration No. of Authorized Intermediary, if applicable:

3.5 Date (DD/MM/YYYY): 28/10/2019

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Dated

Form A
THE COMPANIES ACT, 2017
THE COMPANIES (GENERAL PROVISIONS AND FORMS) REGULATIONS, 2018
[Section 130(1) and Regulation 4]
ANNUAL RETURN OF COMPANY HAVING SHARE CAPITAL

PART-I

(Please complete in typescript or in bold block capitals)

1.1 CUIN (Registration Number)	0083313
1.2 Name of the Company	TRIDENT POWER GR (PVT.) LIMITED
1.3 Fee payment details	1.3.1 Challan No: [ ] 1.3.2. Amount: 400.0
1.4 Form A made upto (dd mm yyyy)	26/10/2019
1.5 Date of AGM	28/10/2019

PART - II

Section A

2.1 Registered Office Address	SUIT NO 08 , GROUND FLOOR EVACUEE TRUST COMPLEX F-5/1 ISLAMABAD Islamabad Capital Territory (I.C.T.) 44000
2.2 Email Address	chughtaimasif@gmail.com
2.3 Office Tel. No.	512346093
2.4 Office Fax No.	512346094
2.5 Principle line of business	--MISCELLANEOUS
2.6 Mobile No. of Authorized officer (Chief Executive/ Director/ Company Secretary/ Chief Financial Officer)	03005653435

2.7 Authorized Share Capital

Classes and kinds of Shares	No. of Shares	Amount	Face Value
Ordinary Shares		2,000,000.00	

2.8 Paid up Share Capital

Classes and kinds of Shares	No. of Shares	Amount	Face Value
Ordinary Shares		10,000.00	

2.9 Particulars of the holding /subsidiary company, if any

Name of Company	Holding/Subsidiary	% Shares Held

2.10 Chief Executive

Name	YOUSAF MEHBOOB KHAN
Address	HOUSE NO 3 , STREET NO 1 , SECTOR F-6/3 ISLAMABAD
NIC No	61101-1918030-3

Next Page

2.11 Chief Financial Officer

Name	MR. MUHAMMAD ASIF CHUGHTAI
Address	HOUSE NO. 196, STREET NO. 46, SECTOR F-11/3, ISLAMABAD
NIC No	61101-1726827-3

2.12 Secretary

Name	MR. MUHAMMAD ASIF CHUGHTAI
Address	HOUSE NO. 196, STREET NO. 46, SECTOR F-11/3, ISLAMABAD
NIC No	61101-1726827-3

2.13 Legal Advisor

Name	
Address	
NIC No	

2.14 Particulars of Auditors

Name	ASIF ASSOCIATES, CHARTERED ACCOUN
Address	2ND FLOOR, SAFDAR MANSION, 16-D EAST, FAZL-O-HAQ ROAD, BLUE AREA, ISLAMAE

2.15 Particulars of Shares Registrar (if applicable)

Name	
Address	
Email	

Section-B

2.16 List of Directors on the date Annual Return is made

S#	Name of Director	Residential Address	Nationality	NIC (Passport No. if foreigner)	Date of appointment or election
1	ZAFAR IKRAM SHEIKH	HOUSE # 01, BLOCK 14 BALDIA ROAD BAHAWALNAGAR BAHAWALNAGAR Punjab Pakistan 62300	Pakistan	31101-7738774-	28/10/2019
2	FIAZ AHMED	MARGALA ROAD HOUSE NO 60 SECTOR F-8/2 ISLAMABAD ISLAMABAD Islamabad Capital Territory (I.C.T.) Pakistan 44000	Pakistan	61101-1916032-(	28/10/2019
3	SYED HADI ALI RIZVI	IBHRAM REHMAT ULLAH ROAD HOUSE NO B-81 MOHALLAH K.D.A SCHEME 1-A KARACHI EAST KARACHI Sindh Pakistan 72500	Pakistan	42201-6153104-	28/10/2019
4	YOUSAF MEHBOOB KHAN	HOUSE NO 3, STREET NO 1 SECTOR F-6/3 ISLAMABAD ISLAMABAD Islamabad Capital Territory (I.C.T.) Pakistan 44000	Pakistan	61101-1916030-	28/10/2019

2.17 List of members & debenture holders on the date upto which this Form is made

S#	Folio#	Name	Address	Nationality	No of shares held/Debenture	NIC No(Passport if foreigner)
Members						
1	01	MR. FIAZ AHMAD	Margalla Road House No. 60, Sector F-8/2 I	Pakistan	25	6110119160325
2	02	MR. YOUSAF MEHBOOB KHAN	House No. 3, Street No. 1, Sector F-6/3, Isla	Pakistan	25	6110119160303
3	03	SYED HADI ALI RIZVI	Ibnram Rehmat Ullah Road Road, House No	Pakistan	24	4220151531041
4	04	MR. ZAFAR IKRAM SHEIKH	House No. 01, Block No. 14, Baldia Road, Bl	Pakistan	26	3110177387747
Debenture Holders						

Company Registration Office Islamabad
SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

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2.18 Transfer of shares (debentures) since last Form A was made

S#	Name of Transferor	Name of Transferee	No of Shares Transferred	Date of Registration of transfer
Members				
Debenture Holders				

PART-3

3.1 Declaration:

I do hereby solemnly, and sincerely declare that the information provided in the form is:

(i) true and correct to the best of my knowledge, in consonance with the record as maintained by the Company and nothing has been concealed and

(ii) hereby reported after complying with and fulfilling all requirements under the relevant provisions of law, rules, regulations, directives, circulars and notifications whichever is applicable.

3.2 Name of Authorized Officer with designation/ Authorized Intermediary	MR. MUHAMMAD ASIF CHUGHTAI	Secretary
3.3 Signatures	Electronically signed by MR. MUHAMMAD ASIF CHUGHTAI	
3.4 Registration No of Authorized Intermediary, if applicable		
	Day Month Year	
3.5 Date	28/10/2019	

SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN
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Company Registration Office Islamabad

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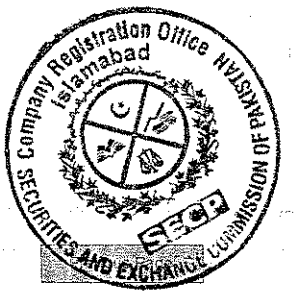
No ADI _____

Dated _____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Islamabad
SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

FORM 28

THE COMPANIES ACT, 2017
THE COMPANIES (GENERAL PROVISIONS AND FORMS) REGULATIONS, 2018
[Section 167 and Regulation 4]

CONSENT TO ACT AS DIRECTOR / CHIEF EXECUTIVE

PART-I

1.1 CUIN (Incorporation number)	0083313			
1.2 Name of the Company	TRIDENT POWER GR (PVT.) LIMITED			
1.3 Fee Payment Details				
1.3.1 Challan Number	E-2019-1100906	1.3.2 Amount	400.00	

PART-II

2. I/we, the undersigned, have consented to act as Director(s) / Chief Executive of the above named company pursuant to section 167 of the Companies Act, 2017, and certify that I / We am / are not ineligible to become Director(s) / Chief Executive under section 153 or 177 of the Companies Act, 2017.

Name in Full	Father's/Husband's Name	Designation	Address	Occupation	NIC No. or Passport No. (In case of foreign national)	Signature
YOUSAF MEHBOOB KHAN	MEHBOOB ALI KHAN	Chief Executive	HOUSE NO. 3 , STREET NO. 1 , SECTOR F-6/3 ISLAMABAD		61101-1916030-3	
ZAFAR IKRAM SHEIKH	SHEIKH IKRAM UD DIN	Director	HOUSE # 01 BLOCK 14 BALDIA ROAD BAHAWALNAGAR BAHAWALNAGAR Punjab Pakistan 62300	BUSINESS	31101-7738774-7	
FIAZ AHMED	HAKIM JAN	Director	MARGALA ROAD HOUSE NO 60 SECTOR F-8/2 ISLAMABAD ISLAMABAD Islamabad Capital Territory (I.C.T.) Pakistan 44000	BUSINESS	61101-1916032-5	
SYED HADI ALI RIZVI	SYED AKBAR ALI RIZVI	Director	IBHRAM REHMAT ULLAH ROAD HOUSE NO B-81 MOHALLAH K.D.A SCHEME 1-A KARACHI EAST KARACHI Sindh Pakistan 72500	BUSINESS	42201-6153104-1	
YOUSAF MEHBOOB KHAN	MEHBOOB ALI KHAN	Director	HOUSE NO 3, STREET NO 1 SECTOR F-6/3 ISLAMABAD ISLAMABAD Islamabad Capital Territory (I.C.T.) Pakistan 44000	BUSINESS	[illegible]	

Company Registration Office Islamabad
SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

PART-III

3.1 Declaration:
I do hereby solemnly, and sincerely declare that the information provided in the form is:

(i) true and correct to the best of my knowledge, in consonance with the record as maintained by the Company and nothing has been concealed; and

(ii) hereby reported after complying with and fulfilling all requirements under the relevant provisions of law, rules, regulations, directives, circulars and notifications whichever is applicable.

3.2 Name of Authorized Officer with designation/ Authorized Intermediary	MR. MUHAMMAD ASIF CHUGHTAI	Secretary
3.3 Signatures	Electronically signed by MR. MUHAMMAD	
3.4 Seal of Authorized Intermediary, if applicable		
3.5 Date (MM/DD/YYYY)	28/10/2019	

Company Registration Office Islamabad
SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN
SECP

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18-2-2020

Assistant Registrar
Company Registration Office Islamabad

No. ADI _____

Dated _____

I do hereby solemnly and sincerely declare that the information provided in the form is:
(i) true and correct to the best of my knowledge, in consonance with the record as maintained by the Company and nothing has been concealed; and
(ii) hereby reported after complying with and fulfilling all requirements under the relevant provisions of law, rules, regulations, directives, circulars and notifications whichever is applicable.

3.2	Name of Authorized Officer with designation/ Authorized Intermediary	MR. MUHAMMAD ASIF CHUGHTAI	Secretary
3.3	Signatures	Electronically signed by MR. MUHAMMAD	
3.4	Registration No. of Authorized Intermediary, if applicable		
3.5	Date (DD/MM/YYYY)	28/10/2019	

Company Registration Office Islamabad
SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN
SECP

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Assistant Registrar
Company Registration Office Islamabad

No. ADI _____

Dated _____

181 (ORDER TO GRANT / REFUSE REGISTRATION ON APPLICATION)

Name: TRIDENT POWER GR (PVT.) LIMITED
Address: SUIT NO 8, GROUND FLOOR, EVACUE TRUST COMPLEX SECTOR F-5/1, Islamabad Islamabad Urban

100000011582135

Registration No 7233464
Tax Year : 2016
Date :
Period : 01-Jul-2015 - 30-Jun-2016
Medium : System
Due Date : 23-May-2016
Document Date : 23-May-2016

Personal Info:

Person : Company
CNIC / CNICOP : 7233464
Type : Company formed and registered under the Companies Ordinance, 1984 or any other law repealed thereunder
Name : TRIDENT POWER GR (PVT.) LIMITED
Cell No. : 00923335123749
Email : tridentyw@gmail.com
Nationality :
Accounting Period : 01st July - 30th June
Incorporation Date : 01-Apr-2013
Liquidation Date :
Registered Address : SUIT NO 08 , GROUND FLOOR EVACUEE TRUST COMPLEX F-5/1 ISLAMABAD Islamabad Capital Territory (I.C.T.) 44000
STRN :

Addresses:

SUIT NO 8, GROUND FLOOR, EVACUE TRUST COMPLEX SECTOR F-5/1, Islamabad Islamabad Urban

Type : Commercial Property
Capacity : Benami / Lessee / Tenant / Franchisee / Occupant
Acquisition Date :
Form : Office
% Share : 100
Disposal Date :
Owner Name :
Owner CNIC :

Businesses:

TRIDENT POWER GR (PVT.) LIMITED

Capacity : Owner
Acquisition Date : 01-Apr-2013
Disposal Date :

Activities	Principle	ST	FED	Start Date	End Date
Other service activities/SERVICES/SERVICES	Yes	Yes	No	01-Apr-2013	

Address	Capacity	Start Date	End Date
SUIT NO 8, GROUND FLOOR, EVACUE TRUST COMPLEX SECTOR F-5/1, Islamabad Islamabad Urban	Business Operated on	23-May-2016	

Links:

Registration No.	Name	Capacity	% Share	Link Start Date	Link End Date

181 (ORDER TO GRANT / REFUSE REGISTRATION ON APPLICATION)

Name: TRIDENT POWER GR (PVT.) LIMITED

Address: SUIT NO 8, GROUND FLOOR, EVACUE TRUST COMPLEX SECTOR F-5/1, Islamabad Islamabad Urban

10000011582135

Registration No 7233464
Tax Year : 2016
Date :
Period : 01-Jul-2015 - 30-Jun-2016
Medium : System
Due Date : 23-May-2016
Document Date : 23-May-2016

Links:

Registration No.	Name	Capacity	% Share	Link Start Date	Link End Date
3[illegible]19160303	YOUSAF M KHAN	Director	25.00	01-Apr-2013	
3110177387747	ZAFAR IKRAM SHEIKH	Director	26.00	01-Apr-2013	
3110119160303	YOUSAF M KHAN	Principal Officer	00.00	01-May-2016	
3110119160325	FIYAZ AHMAD	Director	25.00	01-Apr-2013	
4220161531041	SYED HADI ALI RIZVI	Director	24.00	01-Apr-2013	

Attributes

Attribute	Value
Decision	Granted / Accepted

Attachments

Description
Evidence of tenancy / ownership of business premises
Letter on letterhead of the company signed by all Directors, verifying the Principal Officer and authorizing him for Income Tax Registration
Evidence of tenancy / ownership of business premises
Evidence of tenancy / ownership of business premises
[illegible]dence of tenancy / ownership of business premises
Paid utility bill of business premises not older than 3 months
Letter on letterhead of the company signed by the competent authority, authorizing a person for Income Tax Registration
Evidence of tenancy / ownership of business premises
Evidence of tenancy / ownership of business premises

Fouzia Iqbal
Assistant / Deputy Commissioner Inland Revenue
Enforcement & Collection-
Unit-14

Printed on : Mon, 23 May 2016 17:43:28

181 (ORDER TO GRANT / REFUSE REGISTRATION ON APPLICATION)

Name: TRIDENT POWER GR (PVT.) LIMITED

Address: SUIT NO 8, GROUND FLOOR, EVACUE TRUST COMPLEX SECTOR F-5/1, Islamabad Islamabad Urban

100000011582135

Registration No 7233464
Tax Year : 2016
Date :
Period : 01-Jul-2015 - 30-Jun-2016
Medium : System
Due Date : 23-May-2016
Document Date : 23-May-2016

ACKNOWLEDGEMENT SLIP

114(1) (Return of Income filed voluntarily for complete year)

Name: TRIDENT POWER GR (PVT.) LIMITED
Address: SUIT NO 8, GROUND FLOOR, EVACUE TRUST COMPLEX SECTOR F-5/1, Islamabad Islamabad Urban
Contact No: 00923335123749

100000063827708

Registration 7233464
Tax Year : 2019
Period : 01-Jul-2018 - 30-Jun-2019
Medium : Online
Due Date : 31-Dec-2019
Document 19-Nov-2019

Description	Code	Amount
Refundable Income Tax	9210	165.00

This is not a valid evidence of being a "filer" for the purposes of clauses (23A) and (35C) of sections 2 and 181A.

114(1) (Return of Income filed voluntarily for complete year)

Name: TRIDENT POWER GR (PVT.) LIMITED
Address: SUIT NO 8, GROUND FLOOR, EVACUE TRUST COMPLEX SECTOR F-5/1, Islamabad Islamabad Urban

Contact No: 00923335123749

100000063827708

Registration 7233464
Tax Year : 2019
Period : 01-Jul-2018 - 30-Jun-2019
Medium : Online
Due Date : 31-Dec-2019
Document 19-Nov-2019

Manufacturing / Trading Items

Description	Code	Total Amount	Amount Exempt from Tax / Subject to Fixed / Final Tax	Amount Subject to Normal Tax
Income / (Loss) from Business	3000	-327,728.00	0.00	-327,728.00

Management, Administrative, Selling & Financial Expenses

Description	Code	Total Amount	Amount Exempt from Tax / Subject to Fixed / Final Tax	Amount Subject to Normal Tax
Management, Administrative, Selling & Financial Expenses	3199	327,728.00	0.00	327,728.00
Traveling / Conveyance / Vehicles Running / Maintenance	3155	15,000.00	0.00	15,000.00
Communication	3162	10,000.00	0.00	10,000.00
Stationery / Printing / Photocopies / Office Supplies	3166	33,000.00	0.00	33,000.00
Professional Charges	3171	35,000.00	0.00	35,000.00
Other Indirect Expenses	3180	234,728.00	0.00	234,728.00
Accounting Profit / (Loss)	3200	-327,728.00	0.00	-327,728.00

Inadmissible / Admissible Deductions

Description	Code	Total Amount	Amount Exempt from Tax / Subject to Fixed / Final Tax	Amount Subject to Normal Tax
Tax Amortization for Current Year	3247	0.00	0.00	0.00
Tax Depreciation / Initial Allowance for Current Year	3248	0.00	0.00	0.00

Adjustments

Description	Code	Total Amount	Amount Exempt from Tax / Subject to Fixed / Final Tax	Amount Subject to Normal Tax
Income / (Loss) from Business before adjustment of Admissible Depreciation / Initial Allowance / Amortization for current / previous years	3270	0.00	0.00	-327,728.00

Business Assets / Equity / Liabilities

Description	Code	Amount		

114(1) (Return of Income filed voluntarily for complete year)

Name: TRIDENT POWER GR (PVT.) LIMITED
Address: SUIT NO 8, GROUND FLOOR, EVACUE TRUST COMPLEX SECTOR F-5/1, Islamabad Islamabad Urban

Contact No: 00923335123749

100000063827708

Registration 7233464
Tax Year : 2019
Period : 01-Jul-2018 - 30-Jun-2019
Medium : Online
Due Date : 31-Dec-2019
Document 19-Nov-2019

Business Assets / Equity / Liabilities

Description	Code	Amount		
Total Assets	3349	134,386.00	0.00	0.00
Advances / Deposits / Prepayments	3312	23,904.00	0.00	0.00
Cash / Cash Equivalents	3319	110,482.00	0.00	0.00
Total Equity / Liabilities	3399	134,386.00	0.00	0.00
Authorized Capital	3351	2,000,000.00	0.00	0.00
Issued, Subscribed & Paid up capital	3352	10,000.00	0.00	0.00
Accumulated Profits	3364	-6,103,899.00	0.00	0.00
Trade Creditors / Payables	3384	29,000.00	0.00	0.00
Other Liabilities	3398	6,199,285.00	0.00	0.00

Adjustable Tax

Description	Code	Receipts / Value	Tax Collected / Deducted	Tax Chargeable
Adjustable Tax	640000	0.00	165.00	0.00
Cash Withdrawal from Bank u/s 231A	64100101	0.00	165.00	0.00
Cash Withdrawal from Bank u/s 231A - hbl - 7902407203	64100101	0.00	165.00	0.00

Computations

Description	Code	Total Amount	Amount Exempt from Tax / Subject to Fixed / Final Tax	Amount Subject to Normal Tax
Income / (Loss) from Business	3000	-327,728.00	0.00	-327,728.00
Turnover / Tax Chargeable u/s 113 @1.25%	923160	0.00	0.00	0.00
Accounting Profit / Tax Chargeable u/s 113C @17%	923173	0.00	0.00	0.00
Withholding Income Tax	9201	0.00	165.00	0.00
Refundable Income Tax	9210	0.00	0.00	165.00

AUDITORS REPORT

For The Period Ended 30 June 2019

M/S TRIDENT POWER GR (PRIVATE) LIMITED

Submitted by:

Asif Associates
Chartered Accountants

72 West, 2nd Floor, Benazir plaza,
Jinnah Avenue, Blue Area, Islamabad, Pakistan
Ph # +92 51 2120368
Email: asif@argroup.com.pk
asif@asifassociates.com.pk

Asif Associates
Chartered Accountants

INDEPENDENT AUDITOR'S REPORT

To the members of Trident Power GR (Private) Limited

Report on the Audit of Financial Statements

Opinion

We have audited the annexed financial statements of Trident Power GR (Private) Limited (the Company), which comprise the statement of financial position as at June 30, 2019, and the statement of profit or loss, the statement of changes in equity, the statement of cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies and other explanatory information, and we state that we have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of the audit.

In our opinion and to the best of our information and according to the explanations given to us, the statement of financial position, statement of profit or loss and the statement of changes in equity and the statement of cash flows together with the notes forming part thereof conform with the accounting and reporting standards as applicable in Pakistan and give the information required by the Companies Act, 2017 (XIX of 2017), in the manner so required and respectively give a true and fair view of the state of the Company's affairs as at June 30, 2019, and of the loss, the changes in equity and its cash flows for the year then ended.

Basis for Opinion

We conducted our audit in accordance with the International Standards on Auditing (ISAs) as applicable in Pakistan. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are independent of the Company in accordance with the International Ethics Standards Board for Accountants' *Code of Ethics for Professional Accountants* as adopted by the Institute of Chartered Accountants of Pakistan (the Code) and we have fulfilled our other ethical responsibilities in accordance with the Code. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and Board of Directors for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting and reporting standards as applicable in Pakistan and the requirements of Companies Act, 2017 (XIX of 2017), and for such internal controls as management determines is necessary to enable the preparation of financial statements that are free from the material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Company's ability to continue as going concern, disclosing, as applicable, matters related to going concern and using the going

concern basis of accounting unless management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Board of directors are responsible for overseeing the Company's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs as applicable in Pakistan will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material, if individually or in aggregate, they could reasonably be expected to influence the economic decisions of the users taken on the basis of these financial statements.

As part of an audit in accordance with ISAs, as applicable in Pakistan, we exercise professional judgement and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control .
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to the events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw the attention in our auditor's report to the related disclosures in the financial statements or, if such disclosure are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with the board of directors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the board of directors with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with the board of directors, we determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Report on Other Legal and Regulatory Requirements

Based on our audit, we further report that in our opinion;

a) Proper books of accounts have been kept by the Company as required by the Companies Act, 2017 (XIX of 2017);
b) The statement of financial position, the statement of profit or loss and the statement of changes in equity and the statement of cash flows together with the notes thereon have been drawn up in conformity with the Companies Act, 2017 (XIX of 2017); and are in agreement with the books of account and returns;
c) Investments made, expenditure incurred and guarantees extended during the period were for the purpose of the Company's business; and
d) No Zakat was deducted at source under the Zakat and Ushr Ordinance, 1980 (XVIII of 1980).

The engagement partner on the audit resulting in this independent auditor's report is Muhammad Asif Raza

ASIF ASSOCIATES * Chartered Accountants *

Asif Associates

Asif Associates
Chartered Accountants
Date: August 26, 2019
Place: Islamabad

Trident Power GR (Private) Limited

Statement of Financial Position

As at 30 June 2019

	Note	30-Jun 2019 (Rupees)	30-Jun 2018 (Rupees)
ASSETS			
Current Assets			
Advances, Deposits & Prepayments	4	23,904	23,739
Cash and Bank Balances	5	110,482	14,375
		134,386	38,114
TOTAL		134,386	38,114
EQUITY AND LIABILITIES			
Authorized Capital			
20,000 Ordinary shares of Rs. 100/- each		2,000,000	2,000,000
Issued, Subscribed & Paid up Capital			
100 Ordinary shares of Rs. 100/- each.		10,000	10,000
Accumulated Loss		(6,103,899)	(5,776,171)
		(6,093,899)	(5,766,171)
Non-Current Liabilities			
Loan From Directors	6	6,199,285	5,779,285
Current Liabilities			
Trade and other Payables	7	29,000	25,000
TOTAL		134,386	38,114

The annexed notes from 1 to 11 form an integral part of these financial statements.

CHIEF EXECUTIVE

DIRECTOR

Trident Power GR (Private) Limited

Statement of Profit & Loss

For the year ended 30 June 2019

	Note	30-Jun 2019 (Rupees)	30-Jun 2018 (Rupees)
Revenue		-	-
Cost of Revenue		-	-
Gross Profit / (Loss)		-	-
Operating Expenses	8	(327,167)	(459,421)
Operating Loss		(327,167)	(459,421)
Financial Charges	9	(561)	(1,125)
Loss Before Taxation		(327,728)	(460,546)
Provision for Taxation		-	-
Loss after Taxation		(327,728)	(460,546)

The annexed notes from 1 to 11 form an integral part of these financial statements.

CHIEF EXECUTIVE

DIRECTOR

Trident Power GR (Private) Limited

Statement of Changes in Equity

For the year ended 30 June 2019

	Share Capital	Accumulated Loss	Total
	(Rupees)		
Balance as at July 1, 2017	10,000	(5,315,625)	(5,305,625)
Loss for the year	-	(460,546)	(460,546)
Balance at June 30, 2018	10,000	(5,776,171)	(5,766,171)
Balance as at July 1, 2018	**10,000**	**(5,776,171)**	**(5,766,171)**
Loss for the year	**-**	**(327,728)**	**(327,728)**
Balance at June 30, 2019	**10,000**	**(6,103,899)**	**(6,093,899)**

The annexed notes from 1 to 11 form an integral part of these financial statements.

CHIEF EXECUTIVE

DIRECTOR

Trident Power GR (Private) Limited

Statement of Cash Flows

For the year ended 30 June 2019

	Note	30-Jun 2019 (Rupees)	30-Jun 2018 (Rupees)
Cash Flow From Operating Activities			
Loss Before Taxation		(327,728)	(460,546)
Adjustments for non-cash items:			
Depreciation		-	-
Operating Loss before working capital changes		(327,728)	(460,546)
Working capital changes			
- Changes in assets			
Advances, Deposits & Prepayments		(165)	(2,400)
- Changes in liabilities			
Trade and other Payables		4,000	5,000
		3,835	2,600
Cash generated from operations		(323,893)	(457,946)
Tax Paid		-	-
Net cash generated from/(used in) operating activities		(323,893)	(457,946)
Cash Flow From Financing Activities			
Loan From Directors		420,000	289,285
Net Cash Flows from Financing Activities		420,000	289,285
Net increase/(decrease) in cash and cash equivalents		96,107	(168,661)
Cash and Cash Equivalents at the beginning of the year	5	14,375	183,036
Cash and Cash Equivalents at the end of the year	5	110,482	14,375

The annexed notes from 1 to 11 form an integral part of these financial statements.

CHIEF EXECUTIVE

DIRECTOR

1 THE COMPANY AND ITS OPERATIONS

The Company was incorporated in Pakistan on April 01, 2013 as a Private Limited Company under the Companies Ordinance 1984 (Now Companies Act, 2017).The company is principally engaged in setting up and operating a hydro power plant and its related services. The registered office of the company is situated at Islamabad, Pakistan.

2 STATEMENT OF COMPLIANCE AND SIGNIFICANT ACCOUNTING ESTIMATES

2.1 Statement of Compliance

These financial statements have been prepared in accordance with the approved accounting standards as applicable in Pakistan and the requirements of the Companies Act 2017. Approved accounting standards comprise of such International Accounting and Financial Reporting Standards for Small Sized Entities (SSEs) issued by the Institute of Chartered Accountants of Pakistan. Wherever, the requirements of the Companies Act, 2017 or directives issued by the Securities and Exchange Commission of Pakistan differ with the requirements of these standards, the requirements of the Companies Act 2017 or the requirements of the said directives take precedence.

2.2 Basis of measurement

These accounts have been prepared under the historical cost convention, without any adjustments for the effects of inflation or current values.

2.3 Functional and presentation currency

These financial statements are presented in Pakistan Rupees which is also the company's financial currency. All financial information presented in Pakistan Rupees has been rounded to the nearest rupee.

3. SIGNIFICANT ACCOUNTING POLICIES

The principle accounting policies which have adopted in the preparation of these accounts are as follows:

3.1 Taxation

The provision for current taxation is based on taxable income at the current rates of taxation after taking into account fact that available tax rebates and credits. No provision for deferred taxation is required to be made in these accounts due to the timing differences will not reverse within next three years.

3.2 Property and Equipment

Operating fixed assets are stated at cost less accumulated depreciation. Depreciation is charged to income applying the reducing balance method so as to write off the cost of operating fixed assets over their expected useful life.

Full year's depreciation is charged on the assets in the year of purchase while no depreciation is charged in the year of sale. Gain or loss on disposal of fixed assets is reflected in the income currently.

Normal repairs and maintenance is charged to income as and when incurred. Major renewals and

3.3 Stores and Spares

These are valued at moving average cost.

3.4 Stock in Trade

Stock-in-trade is valued at lower of cost and net realizable value. The cost is calculated on the basis of moving average.

3.5 Borrowing Cost

Borrowing costs are recognized as an expense in the period in which they are incurred, except to the extent that they are directly attributable to the construction of qualifying assets in which case they are capitalized as part of the cost of that asset.

3.6 Revenue Recognition

Revenue from sales of electricity units generated is recognized on accrual basis.

3.7 Trade Debts and Receivables

Trade Debts and Receivables are recognized and carried at original amount /cost less a provision for any in collectable amount, whereas known bad debts are written off.

	Note	30-Jun 2019 (Rupees)	30-Jun 2018 (Rupees)
4 ADVANCES, DEPOSITS & PREPAYMENT			
Advance Income Tax	*4.1*	23,904	23,739
		23,904	23,739
4.1 ADVANCE INCOME TAX			
Opening Balance		23,739	21,339
Add: Tax deducted at source		165	2,400
Less: Provision for the year		-	-
Closing Balance		23,904	23,739
5 CASH AND BANK BALANCES			
Cash in Hand		-	-
Cash at Bank		110,482	14,375
		110,482	14,375
6 LOAN FROM DIRECTORS			
Loan from Director	*6.1*	6,199,285	5,779,285
		6,199,285	5,779,285

6.1 Loan from directors comprise of Rs. 6,199,285 /- (2018: 5,779,285/-) from Mr. Yousaf Mehboob Khan.

7 TRADE AND OTHER PAYABLES			
Creditors		-	-
Accrued and Other Liabilities		29,000	25,000
		29,000	25,000
8 OPERATING EXPENSES			
Travelling & Conveyance		15,000	90,000
Fee & Subscription		112,122	94,285
Printing & Stationery		33,000	5,000
Entertainment		45,045	62,636
Legal & Professional		35,000	137,500
Audit Fee		29,000	25,000
Communication		10,000	-
Miscellaneous		48,000	45,000
		327,167	459,421

	Note	30-Jun 2019 (Rupees)	30-Jun 2018 (Rupees)
9 FINANCIAL CHARGES			
Bank Charges		561	1,125
		561	1,125

10 GENERAL

Figures have been rounded off to the nearest Rupee.

Corresponding figures have been rearranged/reclassified, where necessary, for the purposes of comparison.

11 AUTHORIZATION OF FINANCIAL STATEMENTS

These Financial Statements were approved by the Board of Directors for issuance on _____.

CHIEF EXECUTIVE

DIRECTOR

TRIDENT POWER GR (PRIVATE) LIMITED

1. Introduction

New millennium has introduced vast changes in energy and power sectors. Trans Tech Group has a substantial interest in Pakistan's power sector. With experience which span over the decades, spirit of inquiry has introduced one of the leading groups in Pakistan as well as globally.

With every passing year Trans Tech Group has recorded exponential growth. This dynamic group has redefined its segment of industry and created new standards of excellence. The sheer hard work, dedication and help from the Almighty have brought the group to its present enviable position. The pioneering spirit lives on as the group moves on to a new generation of consolidates and growth. Equipped with irreplaceable experience and infused with latest technology Trans Tech set to meet all changes beyond the millennium.

Human imagination and spirit of hard working further creates competence, which plays an important role in maintaining the quality and commitment. We are proud of our culture inheritance of hard working, honesty and dedication with singleness of the purpose.

2. Project Background

Punjab Power Development Board (PPDB) issued a letter of Intent (LOI) to Trident Power GR (Private) Limited (The Sponsor) for the development of LCC Hydropower 7.55 MW Project in the Punjab Province of Pakistan.

In this connection, feasibility study was carried out and evaluated the energy and power potential of the Project site on the basis of available historic data and existing site conditions. The generated electricity shall be sold to GEPCO. The feasibility study has been approved by the panel of experts (POEs) of PPDB. Besides this, initial environmental examination (IEE) from Environment Protection Agency (EPA), Government of Punjab and Interconnection study from Gujranwala Electric Power Company (GEPCO) has been approved. Generation License has also been issued by National Electric & Power Regulatory Authority (NEPRA).

The Project site is located near Wazirabad in District Gujranwala of Punjab Province. The powerhouse is proposed at RD 1+500 on Lower Chenab Canal (LCC), Khanki. The Project area can easily be accessed through railway and road. Wazirabad and Gujranwala are linked with Lahore through Lahore-Rawalpindi Highway (N5) and accessible from Karachi Port through a good road network.

A summary of the proposed project is as under:

Name of Company:	Trident Power GR (Private) Limited
Registered Office:	Suite # 8, Ground Floor, Evacuee Trust Complex, Sector F-5/1, Islamabad
Type of Generation:	Hydropower Plant/Run of Canal

TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

Location of Generation Facility:	Lower Chenab Canal at RD 1+500, Khanki, Wazirabad, District Gujranwala
Expected life of Facility:	30 years
Commissioning & Operation Date:	2023 (Tentative)
Installed Capacity:	7.55 MW
Plant Factor:	66.53%
Electromechanical Equipment:	Kaplan Horizontal units
Expected Turbine Manufacturers:	Andritz Hydro, Austria Mavel, Chech Republic Global Hydro, Austria Vaptech, Balgharia HPP, France
Expected EPC Contractors:	Nishan Engineers, Pakistan Sinotech, China Descon Engineering, Pakistan Sambu, Korea

3. **Sponsors' Profile**

The company M/s Trident Power GR (Private) Limited was incorporated under the Companies Ordinance 1984 on April 01, 2013 as a private limited company. Trident Power GR (Private) Limited is a consortium of three renowned and well-established business houses, namely:

- ✓ **Trans Tech Group**
- ✓ **SPEC Group**
- ✓ **PCI Group**

Trans Tech Group

Tran Tech Group was founded in the early nineties with the vision of participating in the development of the engineering sectors in Pakistan. However, it was not until the start of a market-based economy that encouraged private investment in infrastructure and major engineering works that provided the opportunity to Trans Tech to establish its mark in its fields of expertise. Trans Tech finally emerged as one of the leading engineering and contracting companies in Pakistan in last two decades. Trans Tech is known today for its expertise in the following fields:

- Civil Construction & Engineering
- Automobile
- Oil & Gas
- Alternative Energy
- Food & Beverages

Trans Tech is owned and operated by two seasoned and professional partners and are the key sponsors and owners of the group.

Mr. Fiaz Ahmad is the Chairman and Managing Partner of Trans Tech Group. He joined the Group since its inception in 1994 and have continued to develop from a small

TRIDENT POWER GR (PRIVATE) LIMITED TRIDENT

Engineering office to what is now a Pakistan based group. Today this company's structure enables to provide with exactly those capacities and skills which is the need for the success of projects. The optimum co-operation between all the technical disciplines, group has now become a matter of daily routine. It leads to specific relationship from which a client can benefit. He has been responsible for promoting new ventures and transforming the Group into the diversified business it is today.
Mr. Ahmad is a renowned acclaimed business leader with deep and comprehensive expertise in introducing new projects in emerging markets. He is credited with launching various projects of civil construction, Automobile, Food & Beverages, oil & gas and Alternate Energy. Mr. Fiaz Ahmad has been managing the Group businesses for the past 22 years. Mr. Fiaz is currently a director in Trident Power GR (Private) Limited.

Mr. Yousuf Mehboob Khan is the Co-Chairman, Partner and Director of a number of Trans Tech Group companies. He joined the group in 1994 and is responsible for the continued growth and success of the Group. He is focused on leading the Group to achieve improved growth in revenue and profitability greater innovation and inventiveness resulting in the good number of Joint ventures with the foreign companies in Pakistan as well as abroad. He is responsible for the strategic planning and business development operations of the Group. He also assists the Chairman in the Group's operations, project management and planning.
His areas of expertise include global and regional business issues, priorities of capital and financial flows as well as current management best practices. Mr. Yousuf is currently a CEO & Director of Trident Power GR (Private) Limited.

Trans Tech Pakistan has its Affiliations and Joint Ventures with the following Foreign firms and Organizations:

- CHINA PETROLEUM ENGINEERING CONSTRUCTION CORPORATION (CPECC)
- CHINA ROAD & BRIDGE CORPORATION – CHINA (CRBC)
- CHINA THREE GORGES INTERNATIONAL CORPORATION (CTGI)
- CHINA INTERNATIONAL WATER & ELECTRIC CORPORATION – CHINA (CWE)
- CHINA NATIONAL MACHINERY & EQUIPMENT IMPORT & EXPORT CORPORATION – CHINA (CMEC)
- CHINA IPPR INTERNATIONAL ENGINEERING CORP. (IPPR)
- CHINA HEAVY MACHINERY CORPORATION (CHMC)
- SINOHYDRO CORPORATION LTD
- CHINA HARBIN POWER ENGINEERING CO. LTD (HPE)
- CHINA RAILWAY FIRST GROUP CO. LTD (CRFGC)
- CHINA RAILWAY TUNNEL CONSTRUCTION (GROUP) LTD – CHINA (CTG)

Trans Tech Group has completed a diverse range of construction project, and have expertise to deliver projects of any size and complexity.

TRIDENT POWER GR (PRIVATE) LIMITED
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- MES Building Construction
- Surface Drainage system
- Lahore Islamabad Motorway (M-2)
- Indus Highway
- Sind Bamboo Complex
- Meran Shah Bridges
- Lahore Bypass
- Rewiring Islamabad Sectors
- Optical Fibre Installation
- National Highway Rehabilitation
- Seven Story Plaza
- Houses in Islamabad
- Shopping Plaza
- Primary School
- Ravian Housing DHA

Spec Group

Spec Group is solely owned and operated by Mr. Zafar Ikram Sheikh.
The SPEC Group is an integrated engineering, design, project management, procurement, fabrication and construction service provider for various sectors. The group has in place global network of offices, manufacturing facilities and resources to undertake responsibility as single contractor for EPC contracts. Single point responsibility as EPC contractor allows clients to pass their risk to Spec and concentrate on their core business activities.

The group has strong presence spanning Middle East, Asia, Africa and headquarters in United States of America. With multinational and multicultural work team of over 6,000 team members striving to achieve the group vision of being among top 10 EPC companies of the regions by year 2012.

Diversified operations with experienced management teams backing every project enables the group to capitalize on our in-house experience. The presence of Engineering, Procurement, project management, construction, commissioning and even original equipment manufacturing capabilities in-house give us a strong edge to execute projects within budget and shorter delivery cycles so clients are assured of quality and value every step of the way.

The Group enjoys the track record of successful project completions within challenging schedules. Our project management team establishes priorities, coordinates activities, monitor closely and controls all operation during entire execution of project. The SPEC Group is not only meeting but exceeding the international concerns for Quality, Health,

TRIDENT POWER GEN (PRIVATE) LIMITED
TRIDENT

Safety and environment while recognizing its social responsibilities, during all phases of operations.

SPEC has seen a tremendous growth is the past recent years, revenue has increased exponentially in the last 5 years. SPEC being a group has a strong financial position where all assets are debt-free. SPEC enjoys a good reputation among customers, having strong relationship with vendors and increasing stakeholders values each year.

Mr. Sheikh is currently a director in Trident Power GR (Private) Limited.

PCI Group

PCI is a renowned name in the carpeting industry since 1948 with an extremely impressive portfolio of products and prides itself on the remarkable achievements since its inception. PCI Flooring (Pak Carpet Industries) is a leading distributor and retailer of flooring, headquartered in Karachi and managing up-country operations through Rawalpindi and Lahore branch offices, we offer institutions, offices, architects and interior designers an almost infinite and unmatchable range of color combinations, textures and patterns, suitable for every kind of commercial and residential flooring applications.

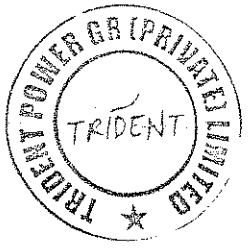
PCI's vision is to become Pakistan's leading building material provider and during the years it has accomplished exceptionally by catering to notable companies like American Express, UEP, PC, Marriott, Unilever, Khaadi and Bank Al Habib to name a few.

PCI partners with the best international carpeting and flooring manufacturers like Interface, which is the largest designer and maker of carpet tile, Quick Step is the first Belgian brand selling top notch laminate flooring solutions, Kaindl, what began as a small sawmill in Lungotz in 1897 is now taking the world by storm from Salzburg with a never-ending supply of new ideas and products, Ege spells exclusivity by offering customized carpeting coupled with excellent quality and Armstrong is a prominent retailer of PVC flooring from USA. These brands are benchmarked for setting the highest standards in the flooring industry. They stay ahead of their rivals by inculcating values of leadership, commitment to providing impeccable service and encouraging innovation at every step.

By joining hands with PCI, they promise to beautify your home by providing the finest quality which will last you a lifetime.

PCI Group is a family owned group and is managed by three brothers. PCI Group comprises of following three companies:

- Pak Carpet Industries (Private) Limited
- Unik Fabrics (Private) Limited
- Automotive Spares & Accessories (Private) Limited



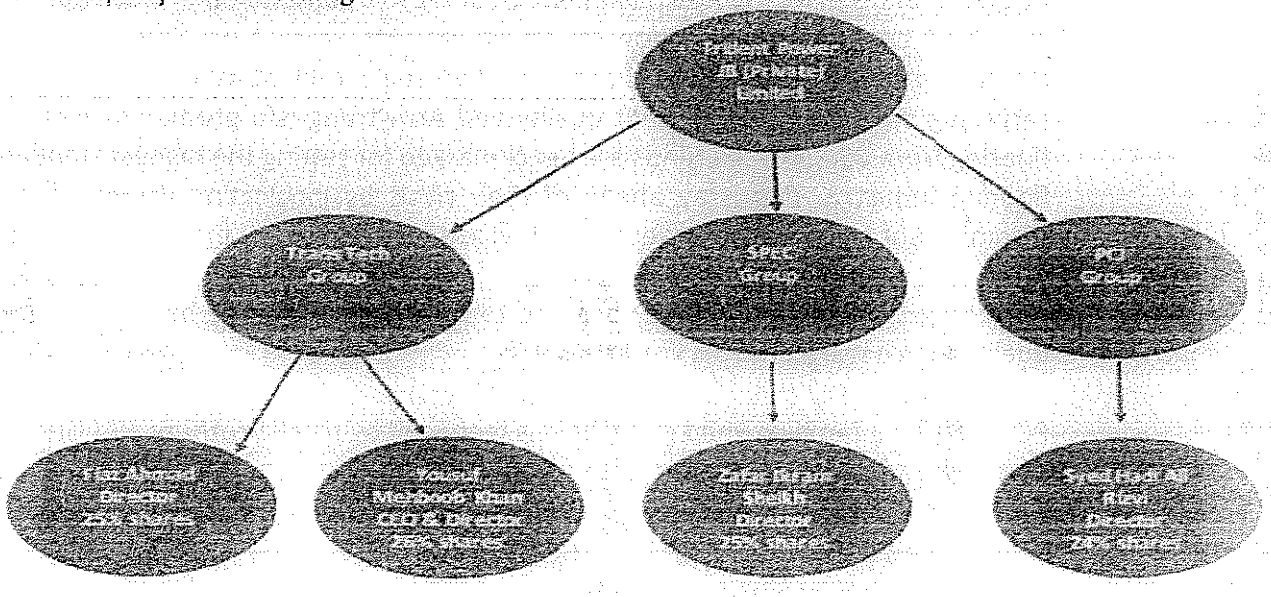
Automotive Spares and Accessories (ASA) is a sister company Pak Carpet Industries Group. ASA entered the automotive industry by becoming supplier of automotive floor carpet to Pak Suzuki Motor Company in 1985. From its humble beginnings as a trading company, ASA today is amongst the largest vendors of automotive interior and related products in Pakistan. The foundations of ASA were laid by keeping in mind its vision of meeting or exceeding customers' expectation in terms of suppliability, quality & cost.

PCI Group is headed by Syed Hadi Ali Rizvi. Mr. Rizvi is currently Chairman & CEO of PCI group which includes Pak Carpet Industries Ltd., Unik Fabrics Ltd. and Automotive Spares & Accessories Ltd., with an expected turnover of Rs. 2.25 billion for year 2015-16.

Mr. Rizvi born in 1960 and graduated from Govt. Commerce Collage Karachi in 1981, joined family business of Oriental carpets. Diversified into machine made carpets in mid - 80's. Started manufacturing auto grade carpets for Automotive Industry of Pakistan. Currently all three major players are using carpets produced in our manufacturing facilities. Gradually developed new parts for OEM and are currently supplying over 200 parts which includes cosmetic parts, fabrics, sheet metal, injection and blow molding parts.
Beside above introduced concept of Carpet tiles, currently representing some of the world leading flooring brands in Pakistan. Recently diversified into packaging industry and are supplying lubricant bottles to one of the market leaders with ambitious plan of expanding this line of business in coming years.

Mr. Rizvi is currently a director in Trident Power GR (Private) Limited.

4. Company Shareholding



TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

	LCC HYDROPOWER PROJECT **DETAILS OF GENERATION FACILITY**	TRIDENT

A. GENERATION BUSINESS INFORMATION

(i)	Name of Company / Licensee	Trident Power GR (Private) Limited.	
(ii)	Business Address	House # 359 H, Street # 4, Phase V, DHA Lahore	
(iv)	Financial Information	**Debt: Equity**	80:20
		Financing Agency	Pak Brunai Bank (Letter of Consent attached as Annexure
		Total Project Development Cost	USD 22.7 Million
		Proposed Mode of Development	IPP
		Tariff Structure	Cost Plus

B. TYPE AND LOCATION

(i)	Type of Generation Facility	Hydropower Plant / Run of Canal
(ii)	Location of Generation Facility	Lower Chenab Canal at RD 1+500, District Gujranwala, Province of Punjab, Pakistan
(iii)	Expected life of Facility from COD	30 Years
(iv)	Tentative Commissioning & Operation Date	15th February, 2020 (Tentative)
(v)	Total Installed Capacity	7.5 MW
(vi)	Total auxiliary consumption	01%
(vii)	Net Installed Capacity	7.525 MW
(vii)	Net Deliverable Energy	43.71 GWh

TRIDENT POWER GR (PRIVATE) LIMITED TRIDENT

(viii)	Plant factor based on net deliverable energy	66.53%

C. WATER SOURCE

(i)	Stream / Tributary / Canal	Lower Chenab Canal (LCC), District Gujranwala in the Province of Punjab, Pakistan whereas LCC off-takes from the left side of Khanki Barrage situated on river Chenab.
(ii)	Storage	**NOT APPLICABLE** It being a plant within canal (like run of the river type facility), there is no storage of water or reservoir.

D. MAIN DESIGN FEATURES

(i)	Plant Design Discharge	250 Cumecs
(ii)	Gross Head	3.6 meter
(iii)	Net Head	3.5 meter
(iv)	Total Installed Capacity	7.5 MW
(v)	Total auxiliary consumption	01%
(vi)	Net Installed Capacity	7.525 MW
(v)	Plant Factor based on net deliverable energy	66.53%
(vi)	Net deliverable energy	43.71 GWh

E. PROJECT MAJOR COMPONENTS

(i)	Powerhouse (Within Main Canal)	• Size: 32m X 42m • Bottom Pit Elevation: 689.3 ft. (210.15 m)

TRIDENT POWER GR (PRIVATE) LIMITED TRIDENT

		• Loading Bay Elevation: 725.3 ft.(221.13 m) • Roof Slab Bottom Elevation: 757.3 ft. (230.89 m) • Hydraulic gates & Trashrack provided on u/s of powerhouse • Stoplogs provided on d/s of powerhouse • 20 Tons overhead travelling crane • Office building & control room • Spillway provided within the main canal within the same axis
(ii)	Electromechanical Equipments	• 04 Nos Kaplan Horizontal Pit Type Units • With rated output of 1875 KW each. • Turbine Runner Dia: 3.46 m with rated & runway speed of 103.4 rpm & 323 rpm respectively. • 1.96 MVA Generator Capacity. • Transformer Capacity 1.96 MVA. • Draft Tube: L = 16.5 m; Exit width = 7.2 m; • Height = 5.2 m
(iii)	Accommodation for O&M Staff	• Operation & maintenance Staff Colony of 80m X 61m size.

F. Expected Civil and E&M Contractors

(i)	Expected Turbine Manufacturers	Andritz Hydro, Austria Mavel, Czech Republic Global Hydro, Austria Gugler, Austria

TRIDENT POWER GB (PRIVATE) LIMITED TRIDENT

(ii)	Expected EPC Contractors	Habib Rafiq (Pvt.) Ltd. Descon, Pakistan Al Fajr

G. Grid Interconnection Arrangement & Electrical Equipments

(i)	Concerned DISCO	MEPCO
(ii)	Status of Interconnection Study	Approved by MEPCO
(iii)	Power Factor	0.85 Lagging; 0.9 Leading
(iv)	Generating Voltage	11 kV
(viii)	Generators	**Number** 4 **Capacity** 2.21 MVA **Total Capacity** 8.84 MVA **Nominal Voltage** 11 kV 11KV **Power factor** 0.85 0.85 **Excitation** Static Static **Frequency** 50 Hz **Efficiency** 97% 97 % **Insulation Class** F **Limit of Utilization** Class B Class B

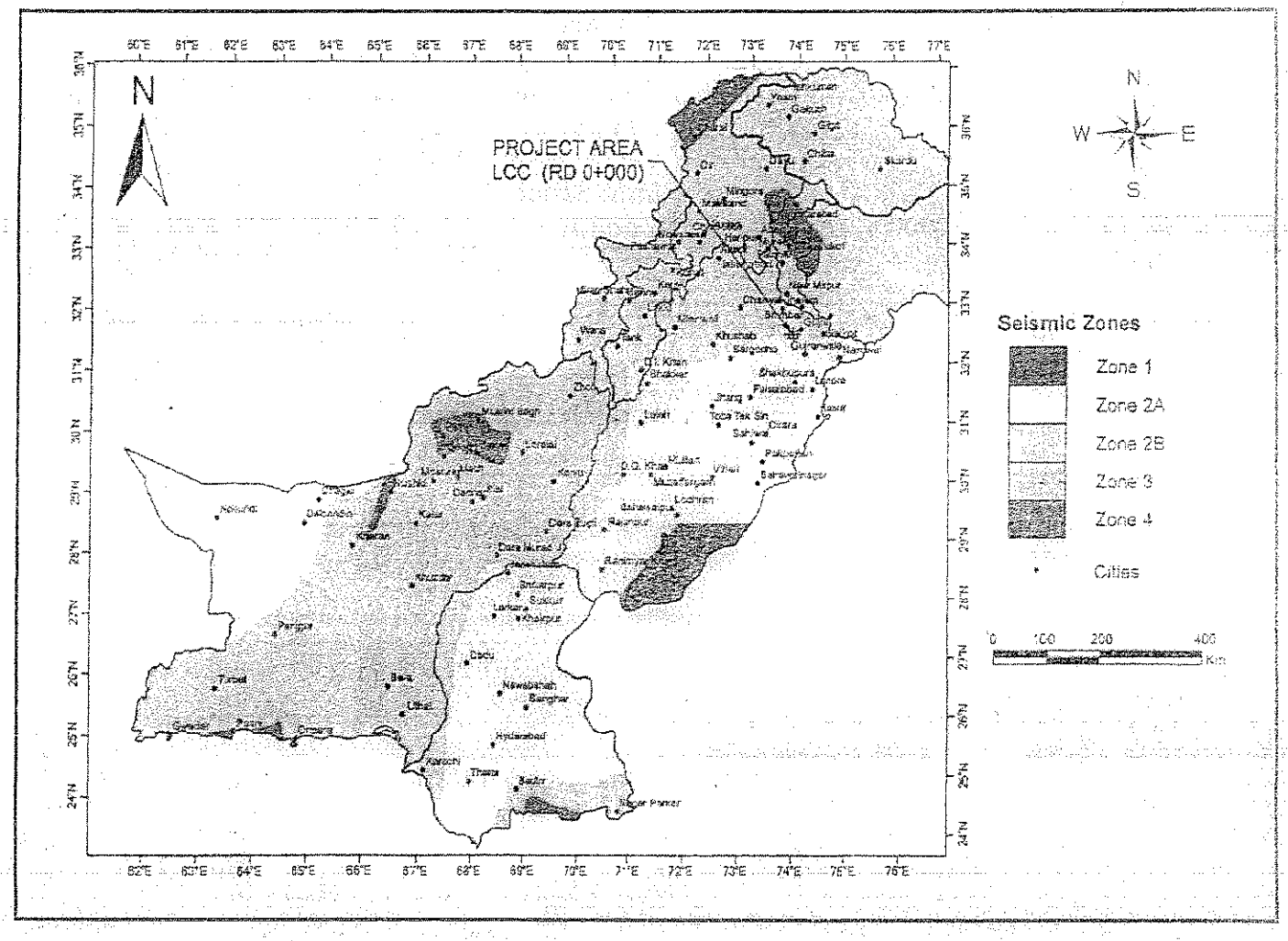
TRIDENT POWER GR (PRIVATE) LIMITED TRIDENT

		Connection Y	Y
(ix)	Transformers (Main)	Total No Capacity Primary Voltage Secondary Voltage Frequency Temperature rise Vector group Impedance Cooling	02 9MVA 11 kV 132 kV 50 Hz 55 OC YN d11 9 % ONAF

TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

LOCATION OF PROJECT AREA OF THE GENRATION FACILITY

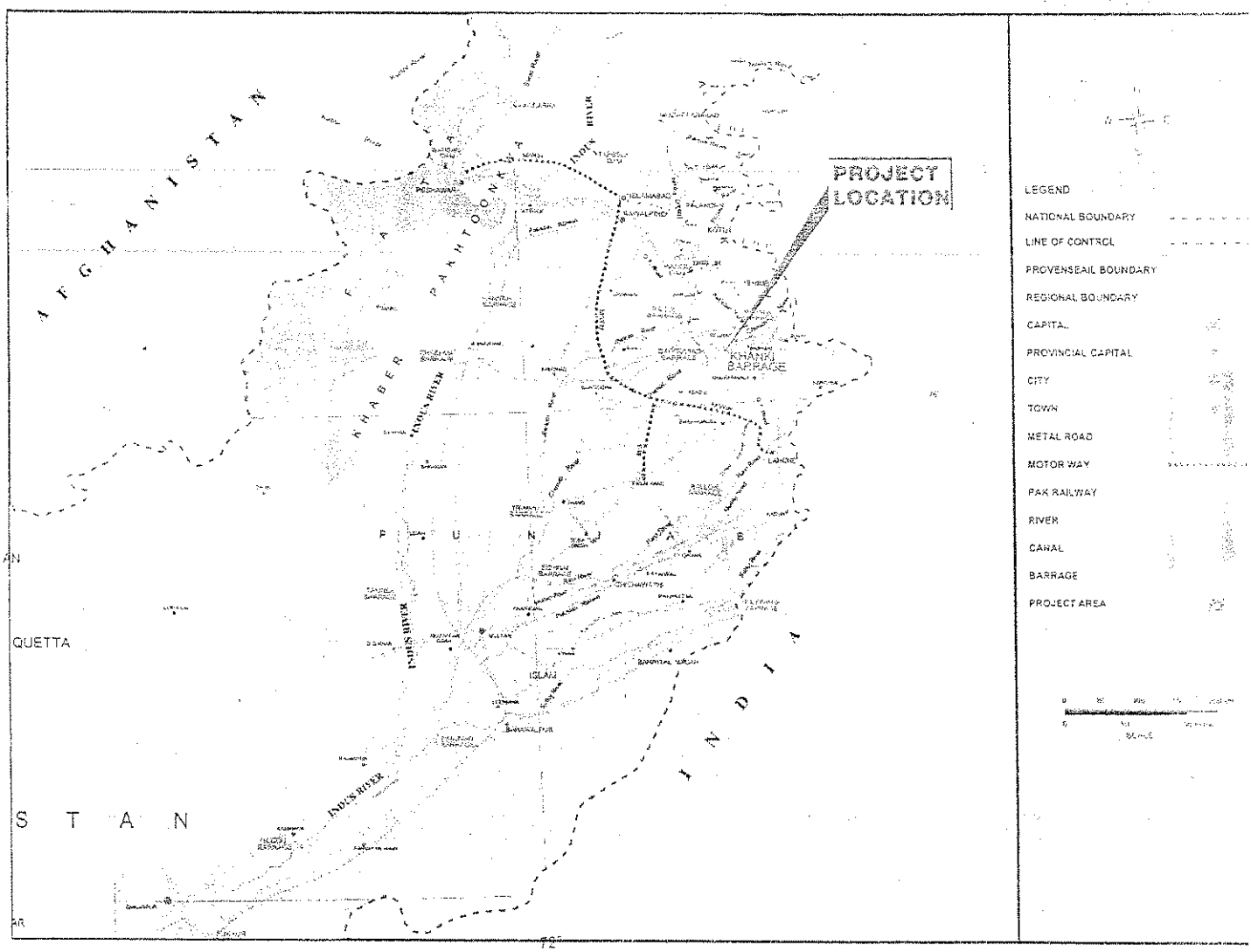
HYDEL POWER PLANT OF LICENSCS



TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

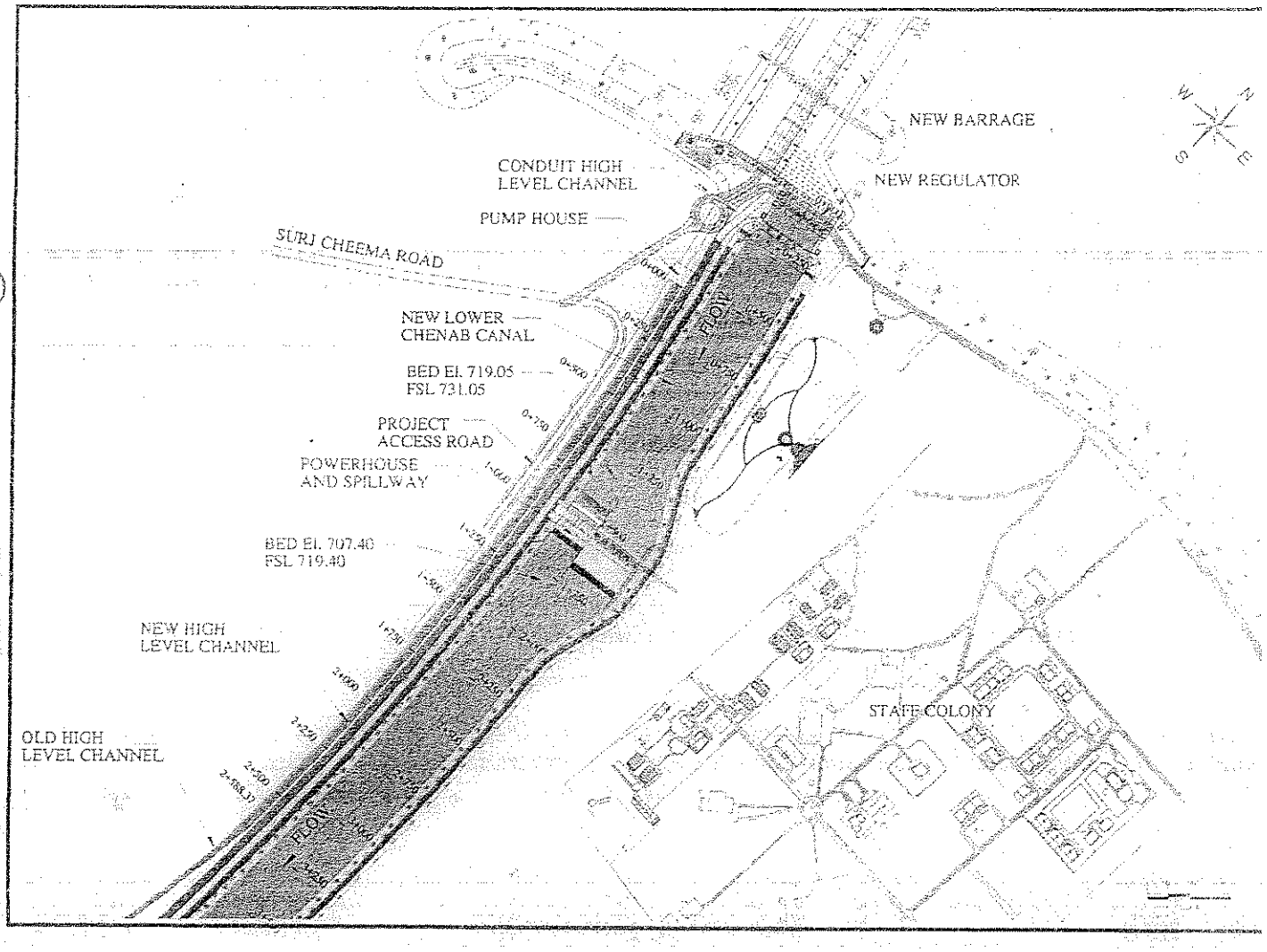
PROJECT LOCATION MAP OF THE GENRATION FACILITY

HYDEL POWER PLANT OF LICENSCS



PROJECT LAYOUT PLAN OF THE GENRATION FACILITY

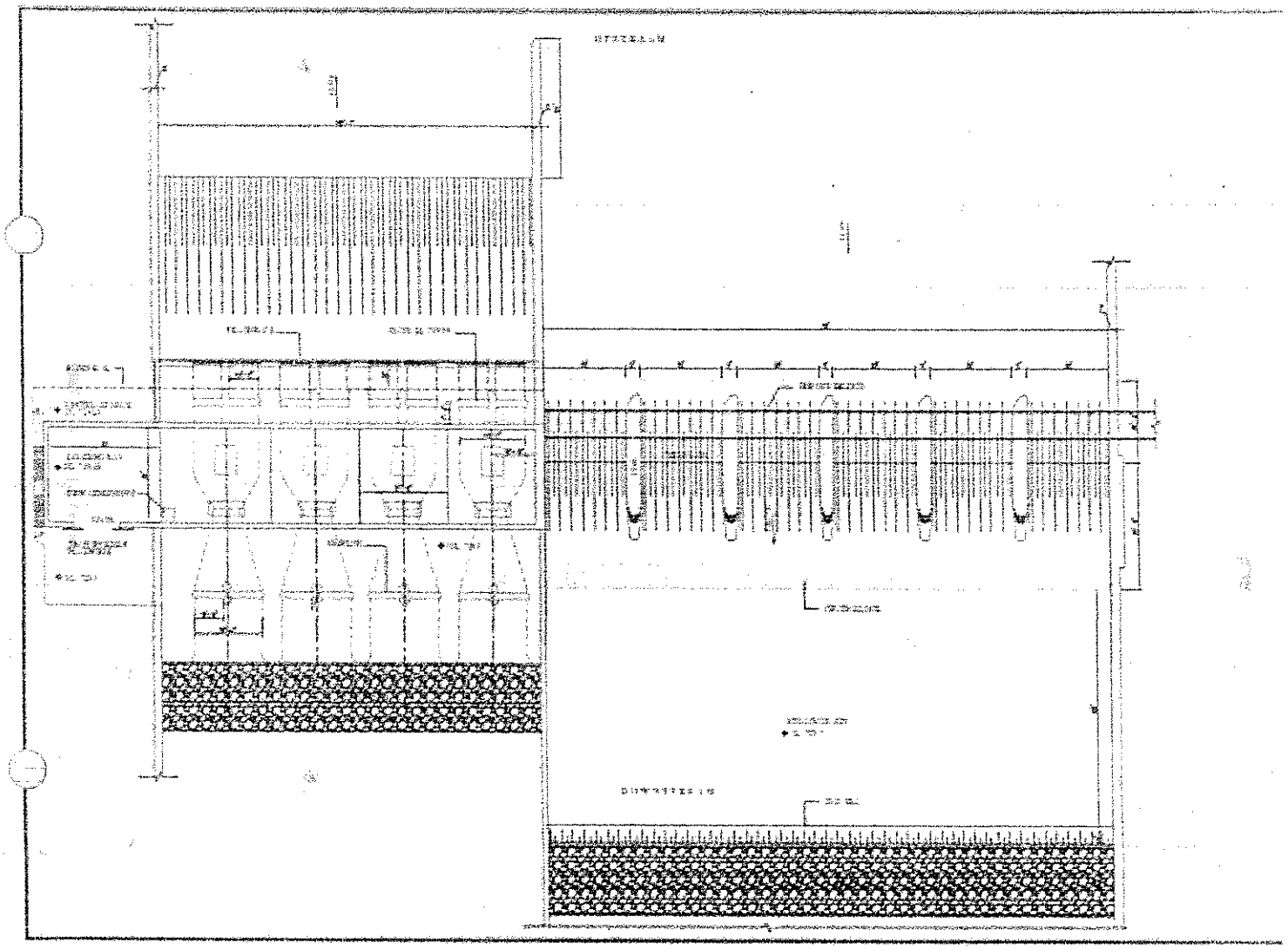
HYDEL POWER PLANT OF LICENSCS



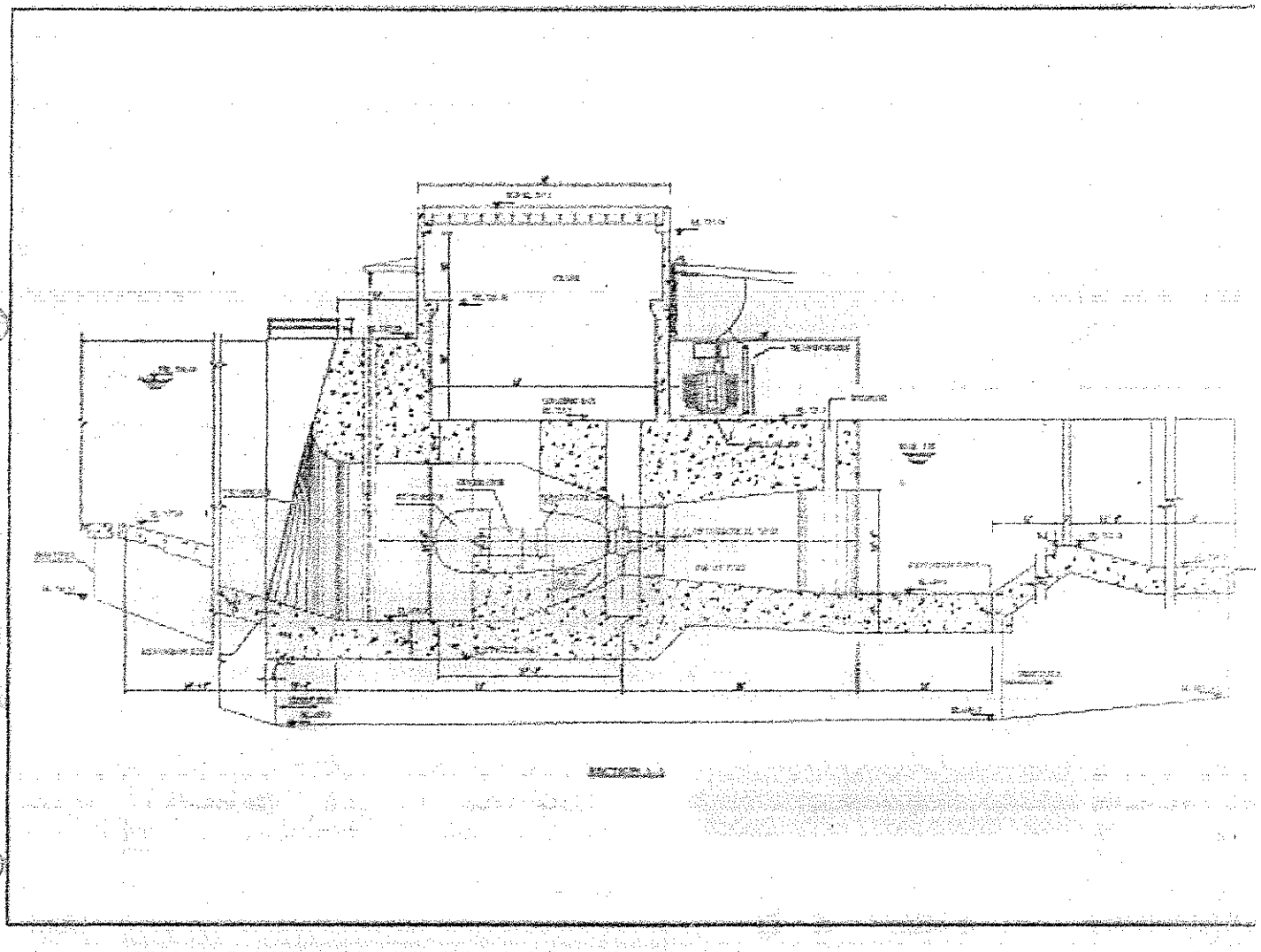
TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

POWERHOUSE AND SPILLWAY PLAN OF THE GENRATION FACILITY

HYDEL POWER PLANT OF LICENSCS



LONGITUDINAL SECTION OF POWERHOUSE OF THE GENRATION FACILITY HYDEL POWER PLANT OF LICENSCS



TRIDENT POWER GR (PRIVATE) LIMITED
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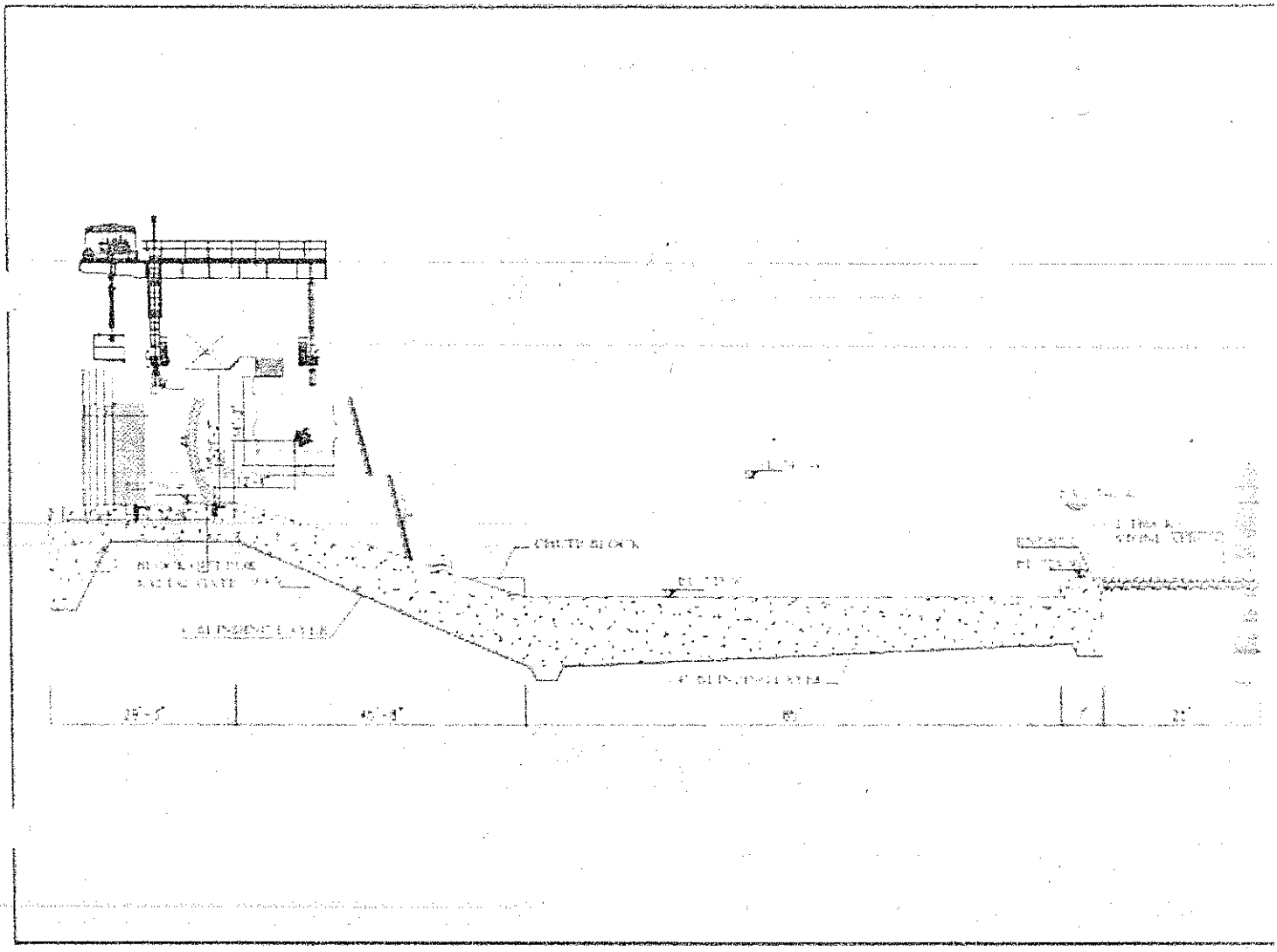
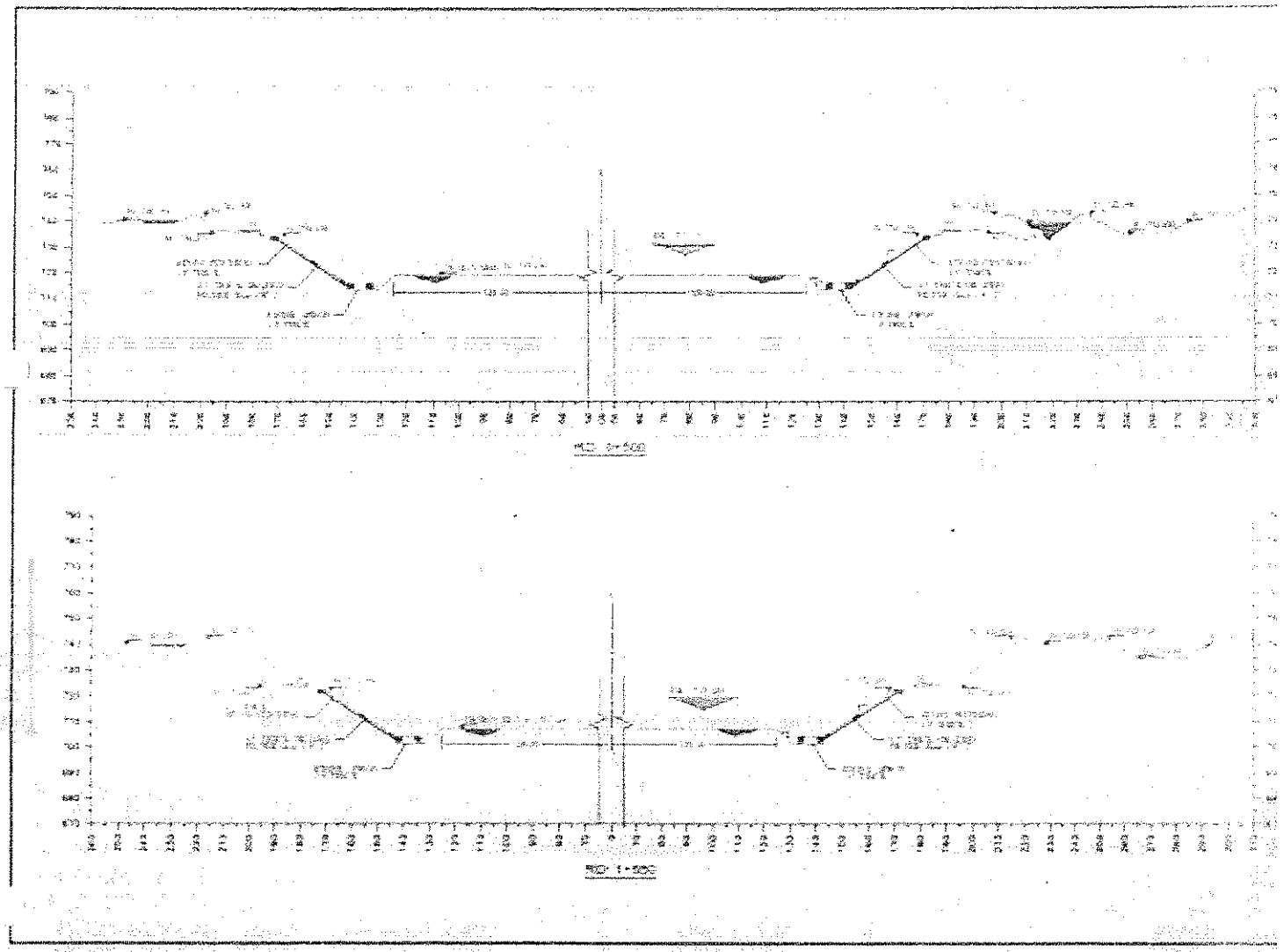
LONGITUDINAL SECTION OF SPILLWAY OF THE GENRATION FACILITY

HYDEL POWER PLANT OF LICENSCS



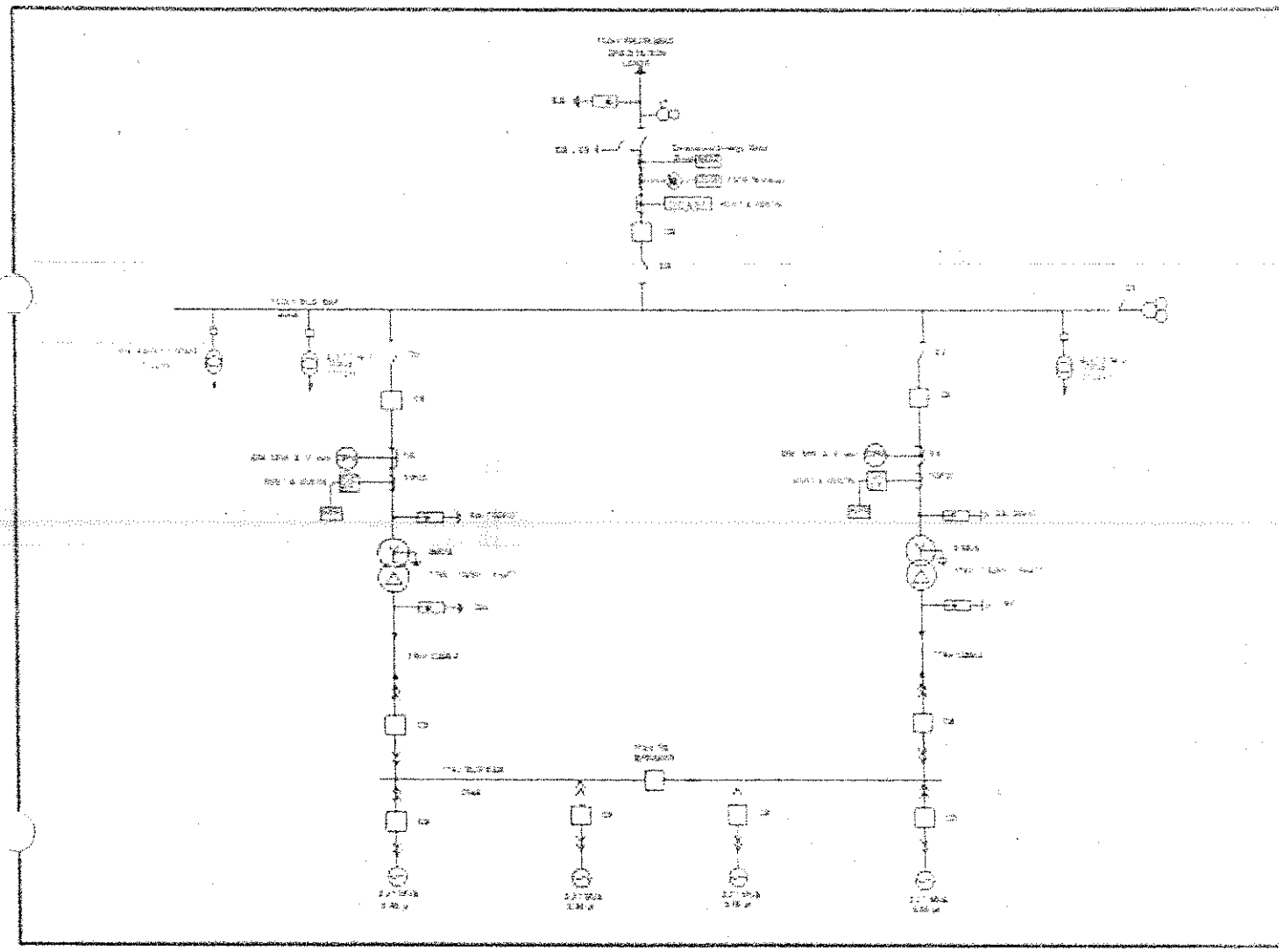
CANAL CROSS SECTION OF THE GENRATION FACILITY

HYDEL POWER PLANT OF LICENSCS



SINGLE LINE DIAGRAM OF THE GENRATION FACILITY

HYDEL POWER PLANT OF LICENSCS

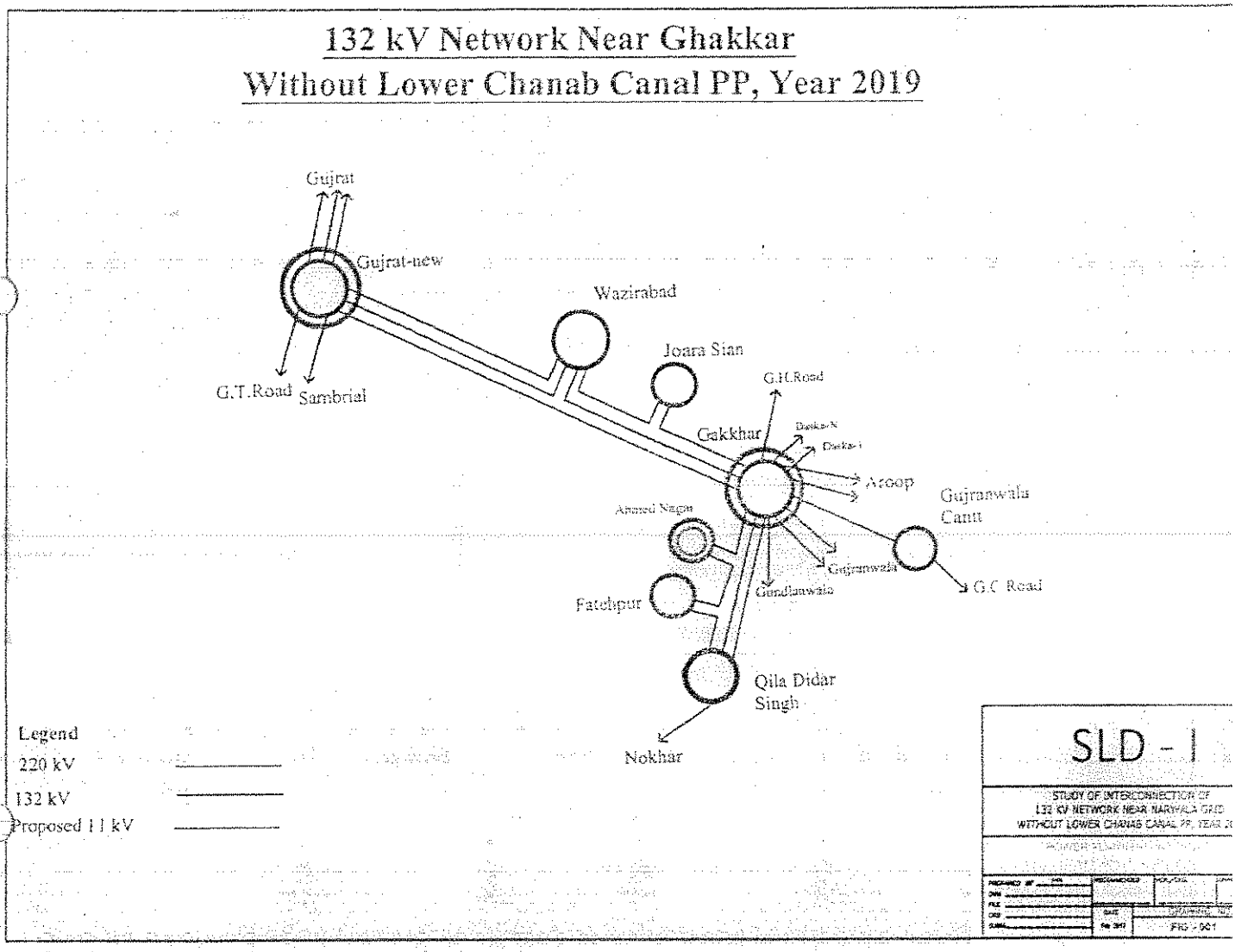


TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

SCHEMATIC DIAGRAM FOR INTERCONNECTION FROM

GENRATION FACILITY HYDEL POWER PLANT OF LICENSCS

132 kV Network Near Ghakkar
Without Lower Chanab Canal PP, Year 2019



TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

6.1. GENERAL

The Lower Chenab Canal (LCC), off-taking from Khanki Head Works and located in Gujranwala District on the River Chenab, was constructed in 1892-98. Khanki weir serves LCC irrigation system designed and constructed in the year 1887 as an inundation canal and converted into a perennial canal in 1892. The potential site for installation of LCC Hydropower Plant is located at the left bank of Chenab River at the Head Regulator of the LCC at RD 0+000 about 17 Km downstream from main GT Road, Wazirabad bypass in district Gujranwala of Punjab Province.

Currently, the Construction of New Khanki Barrage (900 ft. downstream of existing Khanki headworks) and New LCC Head Regulator are in progress which shall cause dismantling of the existing LCC Head Regulator. In this scenario, a hydropower plant is conceived considering the new LCC Head Regulator. The available net head of 3.55m (11.5 feet) and plant design discharge of 250 Cumecs (8827 Cusecs) are considered for the development of this hydropower scheme.

This chapter provides the description of layout of the LCC Hydropower Project.

6.2. PROJECT LAYOUT

The site for construction of LCC Hydropower Project is located at RD 1+500. The project has been planned within the main canal (New LCC) as shown on Drawing No. LCC-HEPP-FS-04. The Hydropower Project utilizes a net head of 11.5 ft. available at the Regulator / fall structure at RD 0+000. It is proposed that the main canal shall be temporarily diverted on left side during construction period and the powerhouse along with a Spillway shall be constructed at RD 1+500. The available head at RD 0+000 shall be shifted at RD 1+500 after canal filling and the raising of canal embankments. The New Regulator at RD 0+000 shall be de-activated meaning thereby the gates will always be fully open. The discharge shall be regulated by the downstream spillway gates and power generating units as it will regulate with much better efficiency. The Regulator at RD 0+000 of New LCC shall only be activated in case of flood condition in the reservoir in order to avoid flood levels in the canal.

6.2.2. POWERHOUSE

The powerhouse structure consists of an intake and main service building to accommodate loading bay and control room. The intake of water from the head race to 4 turbo-generator units has four bays. The span of these bays is 24.5' each. The powerhouse will be constructed in an open pit. The bottom elevation of the pit would be 689.3 ft. On the right of powerhouse, a loading bay and at downstream of loading bay area, transformer platform is provided.

The powerhouse will be constructed in RCC. The piers will rise above from the walls of the 4 bays resting on a mat slab acting as raft. This foundation slab will also provide support to the three turbo-generator units.

The elevation of loading bay is 725.3 ft. The bottom elevation of the roof slab of powerhouse is 753.38. Powerhouse foundations at elevation 680.3 ft. have been designed to accommodate pit type Kaplan turbine and draft tube.

The hydraulic gates / stoplogs provided on the upstream side of the powerhouse intake will facilitate closing of flow for inspection purpose, if and when required.

In order to prevent the entry of tree branches, bushes and other floating material into the turbines bays, a trashrack arrangement has been provided on the upstream of the stoplogs.

The downstream ends of the four bays will be gated by providing stoplogs to regulate the flow to power plant. Details are provided in Drawing No. LCC-HEPP-FS-10 & LCC-HEPP-FS-11.

A 20 ton bridge Crane shall be installed in the powerhouse. A double storey office building has been provided on left side of powerhouse containing store, O&M staff room, R.E room, Battery and Control room.

The cross-section of access road to powerhouse is shown on Drawing No. LCC-HEPP-FS-14.

6.2.4. CANAL IMROVEMENT WORKS

LCC is designed for a discharge of 450 Cumecs. The headrace of the powerhouse

shall require improvement in terms of raising of canal bed and embankments up to RD 1+500. The canal bed is proposed to be raised up to 11.5 feet so that the available head at RD 0+000 could be efficiently and effectively be shifted at RD 1+500. Accordingly, it is proposed that the canal embankments shall be raised up to 12 feet which also include the free board of 3.5 feet. A 3 feet stone apron at canal bed adjoining the side slopes shall be provided which will provide stability to the proposed stone pitching of 1' provided on the side slopes. The canal cross sections are provided in Drawing No. LCC-HEPP-FS-09 (03 Sheets) up to a reach of 1+650. It is emphasized that the canal operations shall not be disturbed during construction and operations of the powerhouse.

6.2.5. DEWATERING SYSTEM

The boreholes drilled by M/s Geoscience Associates indicate the ground water table is at a depth of about 16 ft. from the ground surface. The foundation elevation of the pit of the powerhouse is 680.3 ft. It has been estimated that to facilitate the construction of the powerhouse, existing ground water table will have to be lowered by about 20 ft. It has, therefore, been worked out that 36 Nos. pumps of 0.75 cusec capacity each, can achieve this objective by running 10 hours daily in 30 days.

6.2.6. ACCOMODATION FOR O&M STAFF

Suitable office and residential accommodation for operation and maintenance staff of the project will be constructed in the allocated area, as shown on the Drawing No LCC-HEPP-FS-13.

TRIDENT POWER GR (PRIVATE) LIMITED TRIDENT

Global Hydro Energy GmbH, A-4085 Niederranna 41

Trident Power GR (Pvt.) Ltd.

House # 359-H, Street # 4, DHA, Phase-V, Lahore

Pakistan

Niederranna 06.08.2020

Official / Department:

Christian Thaller / Area Sales Manager

Short mark / Ext. / Email:

CT / 0074 / christian.thaller@global-hydro.eu

Subject: Expression of Interest for 7.55 MW LCC Hydropower Project

Dear Sirs,

we at GLOBAL Hydro Energy are specialized in developing, designing, engineering and manufacturing Turbines for small and medium hydro power plants up to a unit capacity of 30 MW for Pelton and Francis and up to 20 MW for Kaplan Turbines. All key components are produced in our own factory in Niederranna, Austria.

Furthermore, we have developed our own Digital Turbine Control System as well as the SCADA System for a perfect operation of the whole hydro power station. This state-of-the-art system is also produced in our manufacturing workshop in Austria.

We are the only company operating out of Western Europe in the field of small and medium Hydro Power offering such a complete equipment package. We are amongst the market leaders in many countries like Turkey, Romania, Chile, Sri Lanka, Vietnam, Malaysia etc. and are going very strong in Central and South Asia. I kindly invite you to visit our website for more details.

It is to express our keen interest that we will fully cooperate with Trident Power GR (Private) Limited for the execution of the said project. We will participate in the EPC Bidding and execute the construction and detailed engineering works upon award of the contract. A brief company profile of our company is also enclosed with this letter and you may contact us anytime if you require any information.

Ewald Karl – Director Sales

Christian Thaller – Sales Manager

Liquid Energy – Solid Engineering

GUGLER
TECHNOLOGY FOR HYDROPOWER PLANTS

GUGLER Water Turbines GmbH | Gewerbeweg 3 | 4102 Goldwörth, Austria

Trident Power GR (Pvt.) Ltd.
House # 359-H, Street # 4, DHA,
Phase-V, Lahore Pakistan

Florian Altendorfer
Sales Manager
GUGLER Water Turbines GmbH

+43 7234 83902-62
+43 676 73 56 737
f.altendorfer@gugler.com

05.08.2020

Subject: Expression of Interest for 7.55 MW LCC Hydropower Project

GUGLER Water Turbines GmbH is a leading supplier of – state of the art – turbine technology, supplying all types of Francis, Kaplan and Pelton turbines up to 25 MW per unit and related electro-mechanical equipment for small and medium sized hydro power plants (water to wire).

For more than 100 years, our family has been dedicated to the development and construction of water turbines, small hydropower plants and the generation of electricity from hydropower. With more than 1,000 successfully installed turbines, the third-generation GUGLER family is one of the world's leading suppliers of water turbines

It is to express our keen interest that we will fully cooperate with Trident Power GR (Private) Limited for the execution of the said project. We will participate in the EPC Bidding and execute the construction and detailed engineering works upon award of the contract. A brief company profile of our company is also enclosed with this letter and you may contact us anytime if you require any information.

Sincerely,

Alois GUGLER
Managing Director

TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

M a v e l, a.s.
Jana Nohy 1237, 256 01 Benesov, Czech Republic
Phone: +420 317 728 483 E-mail: info@mavel.cz

Trident Power GR (Pvt.) Ltd.
House 359-H, Street 4, DHA, Phase-V, Lahore
Pakistan.

Benešov, July 12, 2020

Sub.: **Expression of Interest for the participation in the 4.6 MW Ravi HPP in Pakistan by M a v e l, a.s. from the Czech Republic**

To whom it may concern,

M a v e l, a.s. hereby expresses its keen interest to cooperate with Trident Power GR (Pvt.) Ltd. for the execution of above mentioned project as a supplier and engineering company of the hydro electrical equipment.

Mavel is a premier global manufacturing and engineering company specializing in turbines and related technology for hydroelectric power plants, utilizing turbines with a capacity from 30 kW to 30+ MW per unit.

Mavel has more than 100 proprietary Kaplan, Francis, Pelton and Micro turbine designs, state of the art European production facilities and worldwide service capability.

In case more information is needed, please feel free to contact us.

Yours sincerely

Gijsbertus Johannes Brands

Sales Dept.,
M a v e l, a.s.

MAVEL
akciová společnost
Jana Nohy 1237
256 01 BENEŠOV
CZECH REPUBLIC
- 48 -

Jana Nohy 1237
256 01 Benešov
Czech Republic
www.mavel.cz

Tel: +420 317-755-122 Mob.: +420 607 478 67
E-mail: brands@mavel.cz

TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

Date: 12th August 2020

Trident Power GR (Pvt.) Ltd.

House # 369-H, Street # 4, DHA, Phase-V, Lahore Pakistan

Subject: Expression of Interest for 7.55 MW LCC Hydropower Project

Introduction to Descon

Company originated from Pakistan in 1977, Descon has evolved into a multi-faceted conglomerate. Over the last four decades, the company has spawn into group of ventures, giving it a diverse activities portfolio, which include (but not limited to) Engineering, Procurement, Manufacturing, Construction, Operations & Maintenance, Power Solutions, Chemicals. While the group companies operate independently on a corporate structure, Descon Engineering remains the flagship company and provides the associated identity to its affiliates.

The company is unique in its resource base, with in-house capabilities for Design Engineering, Manufacturing, Construction and Maintenance Services. These are applicable to a wide variety of projects related to Industrial plants, Automobile, FMCG, Petrochemicals, Energy and Infrastructure developments for which services are provided on turnkey / EPC basis as well as selectively. Project management expertise vested through customized software with sophisticated IT based systems is one of the key elements to achieving successful culmination of projects. The company operations span Pakistan, The UAE, Kingdom of Saudi Arabia, Kuwait, Qatar & Oman. The roster of clients and end-users is replete with auspicious names in Pakistan and overseas markets.

It is to express our keen interest that we will fully cooperate with Trident Power GR (Private) Limited for the execution of the said project. We will participate in the EPC Bidding and execute the construction and detailed engineering works upon award of the contract. A brief company profile of our company is also enclosed with this letter and you may contact us anytime if you require any information.

Imran Khan Cheema
Head Marketing & Sales
Infrastructure Division
Descon Engineering Limited

DESCON ENGINEERING LTD. LAHORE

TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

AFI

Al-Fajr International

Our Ref: AFI/EOI/LCCHPP/08/20 Dated: 7th August 2020

Trident Power GR (Pvt.) Ltd.
House # 359-H, Street # 4, DHA, Phase-V, Lahore Pakistan

Subject: Expression of Interest for 7.55 MW LCC Hydropower Project

AL-FAJR International (AFI) is one of the fast growing Integrated Companies in Pakistan, established during the year 1979. Head Office of the Company is located at Office No. 1, Mezzanine Floor, Pak Plaza, Fazal-e-Haq Road, Blue Area, Islamabad, Pakistan. The primary purpose of establishing AL-FAJR International is to provide Engineering based proper project facilitation in order to technologically strengthen Pakistan through:

- Project Co-Development
- Turnkey Solutions for Various Sectors
- Technology Transfer Assistance and Capacity Buildings Facilitation
- Project Management Support
- Hydropower EPC/Turnkey Contractor
- Waste Water Treatment Solutions
- SIS/AVC System EPC/Contractor
- Fire Fighting Equipment Contractor
- Producers of Rock Salt from own Mines
- Operation & Maintenance of Hydropower Plants
- Rehabilitation of Hydropower Plants
- Supply of Spare Parts for Power Plants

We are pleased to inform you that Al-Fajr International (AFI) is one of the Pioneers in development of small Hydro Power Projects in Pakistan particularly in the region of Gilgit Baltistan, KPK and AJK. AFI playted a vital role in the development of Hydro power Projects of high quality and executed more than 60 Projects in northern part of Pakistan. AFI is involved in EPC / Turnkey Hydro Power projects. We are also specialized in Operation & Maintenance Services of Hydro Power Projects in Pakistan (KPK and Punjab). Looking at present energy shortages and resource constraints in the country, AFI is now engaged in PPP (Public Private Partnership) Projects, IPP (Independent Power Projects) and EPC / Turnkey Projects.

AFI believes that economic development in Pakistan is only possible with sufficient clean energy at an affordable cost. Therefore, hydropower shall always remain a key sector of activity in AFI

It is to express our keen interest that we will fully cooperate with Trident Power GR (Private) Limited for the execution of the said project. We will participate in the EPC Bidding and execute the construction and detailed engineering works upon award of the contract. A brief company profile of our company is also enclosed with this letter and you may contact us anytime if you require any information.

Thanks & Regards

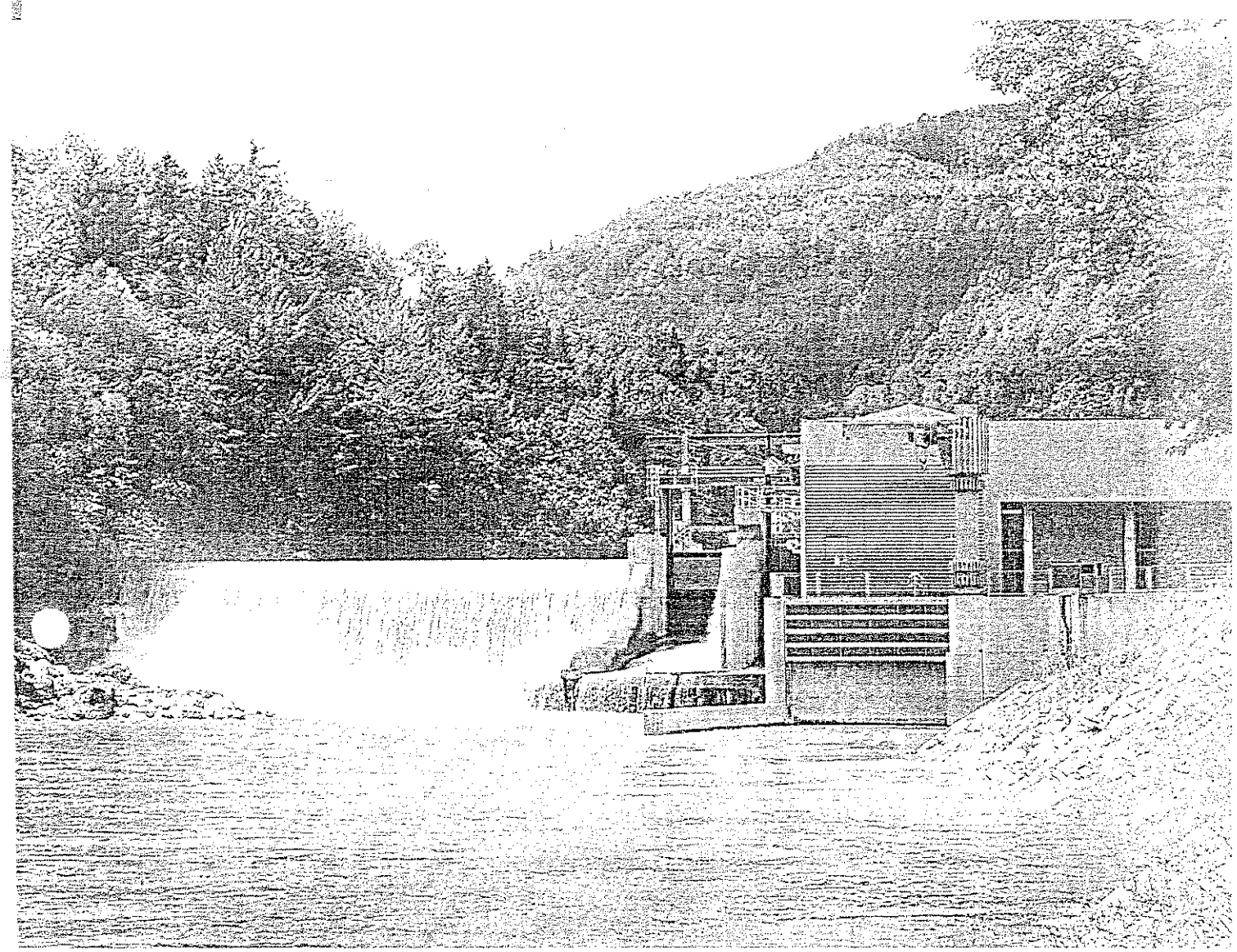
AL-FAJR INTERNATIONAL ISLAMABAD

TAHIR HASSAN
Managing Director

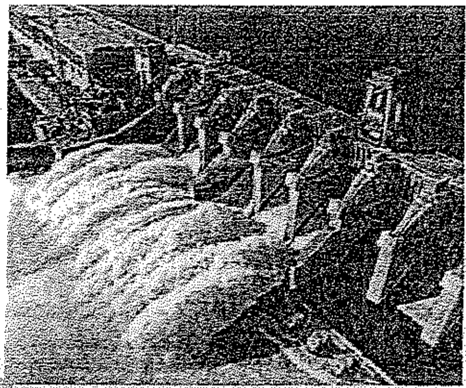
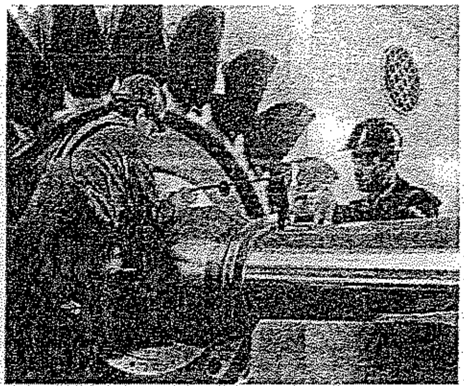
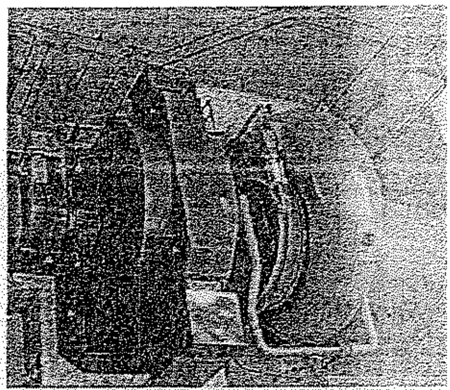
TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

ANDRITZ
Hydro

Compact Hydro



ANDRITZ HYDRO
Worldwide leader in hydropower business

The ANDRITZ GROUP is a global market leader for customized plant, process technologies and services for the hydropower, pulp and paper, metals, and other industries (solid/liquid separation, feed and biofuel). The Group is headquartered in Graz, Austria and has a staff of approx. 13,000 employees worldwide. ANDRITZ operates more than 150 production sites, service and sales companies all around the world.

In a world trying to join forces to reduce emissions of greenhouse gases and pollution, we in ANDRITZ HYDRO support our customers in their environmental efforts by providing technologies that maximize generation of energy from hydropower.

Hydropower is the most important renewable resource of energy by far. According to the IEA (International Energy Agency), only one third of realistic hydropower potential has been developed and so, a large amount of new hydropower projects are to be expected in the future.

ANDRITZ HYDRO is one of the worldwide leaders in the supply of electromechanical equipment and services 'From water to wire' for hydropower plants. Our range of products and services cover the supply of equipment and services for new hydropower plants as well as for the refurbishment and overhaul of existing facilities. ANDRITZ HYDRO is the global leader in the market of small hydropower stations.

One of our goals is to provide innovative technology for the best return on investment and benefit to our customers. ANDRITZ HYDRO is constantly improving the energy efficiency of its equipment and technologies through continued Research & Development.

Our commitment to serve our customers locally all around the world and our proven experience and state-of-the-art technologies are reasons why you can be assured to obtain the best energy application from us.

Highlights

- More than 170 years of experience in turbines, which represents over 30,000 units with more than 400,000 MW installed
- More than 120 years of experience in electrical equipment
- Complete range up to 800 MW
- Leading in service and rehabilitation
- World leader for small hydropower plants

COMPACT HYDRO
The best solution up to 30 MW

Based on the experience and know-how gained through intensive Research & Development activities for hydropower plants, ANDRITZ HYDRO has developed a modular design concept for the equipment to be included in small hydropower plants.

COMPACT HYDRO provides solutions with products and services for all types of small hydro power plants up to an output of 30 MW per unit including complete electro-mechanical installation ('From water to wire').

The modular design by COMPACT HYDRO minimizes the number of components and sizes, covering all types of turbines with a wide range of applications. It also allows an economic development of small hydro power potentials with power houses perfectly fitting into the landscape.

Highlights

- Clean and renewable energy
- Low environmental impact
- Modular equipment design
- Single source of supply
- Workshop assembly
- Short periods of implementation
- Low investment cost
- Optimized annual energy production

All these charactistics improve your return on investments.

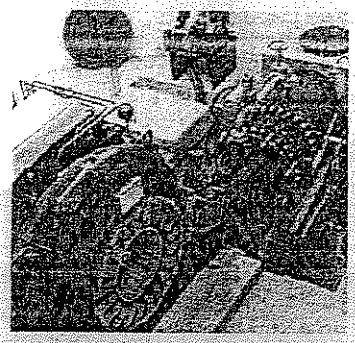
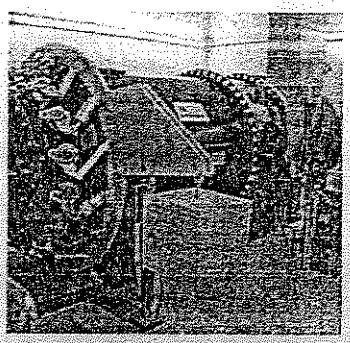
Every week, another two COMPACT HYDRO units start producing energy somewhere around the world.

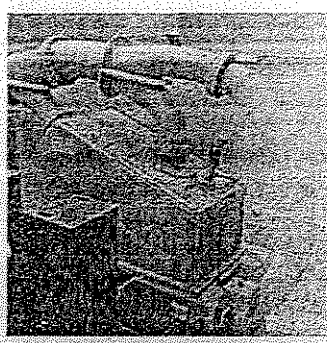
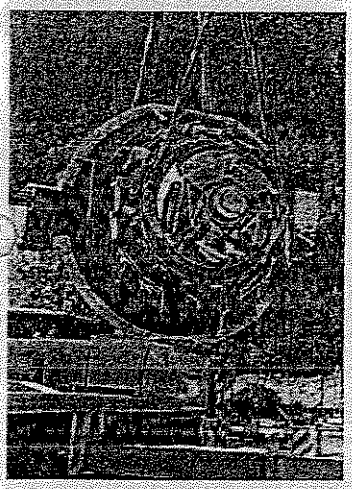
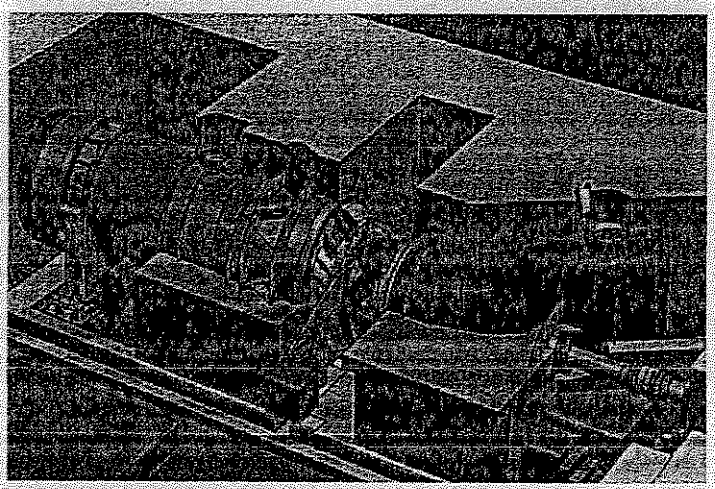
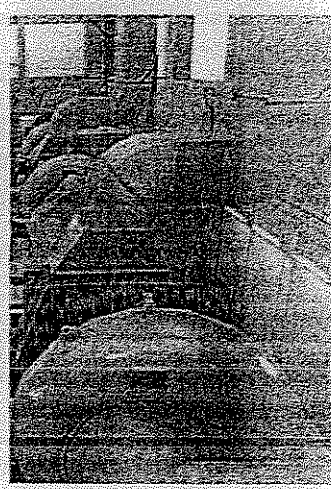
From water to wire

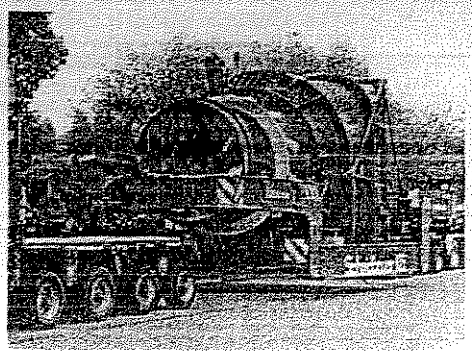
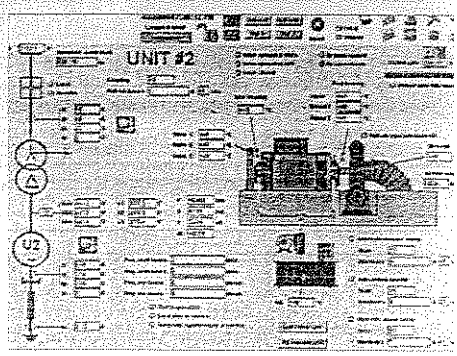
COMPACT HYDRO's 'From water to wire'-concept covers the electromechanical equipment including turbine, gear, generator, inlet valve, control-protection-measuring systems as well as complete mechanical and electrical balance of plant equipment.

Highlights

- Single source responsibility
- Simplification of interfaces
- Short total installation time
- Short commissioning time
- Only one software and hardware solution for the unit
- Single source training of customer's operating personal

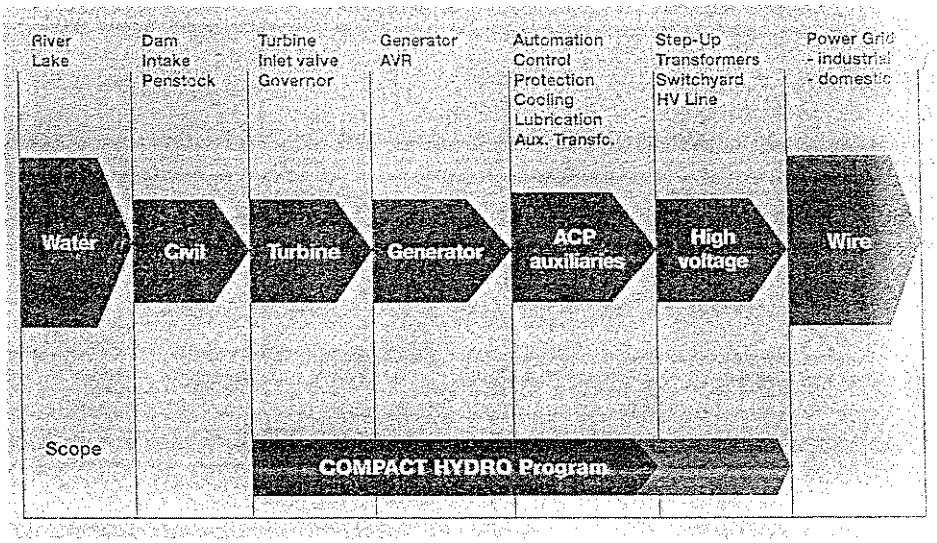



Services

Customers consulting services begin at the project feasibility stage with support continuing throughout the implementation phase and training of the operators.

ANDRITZ HYDRO is bound to advice customers competently and handle their projects with particular care.

COMPACT HYDRO solutions are complemented with a wide range of services such project management, engineering, manufacturing, quality control, transport, installation, commissioning and training.

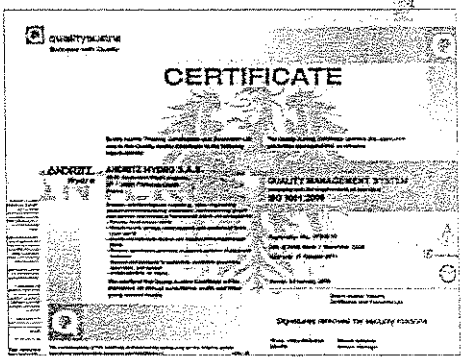


Project management

We take care of the contract progressing considering our customer's specific needs. We provide project management expertise used to develop teamwork with customers and consulting engineers.

Layout optimization

We provide solutions for the layout of the plant to optimize the number and type of units, plant capacity, annual energy production, dimensions of the power plant and many other parameters.



Quality

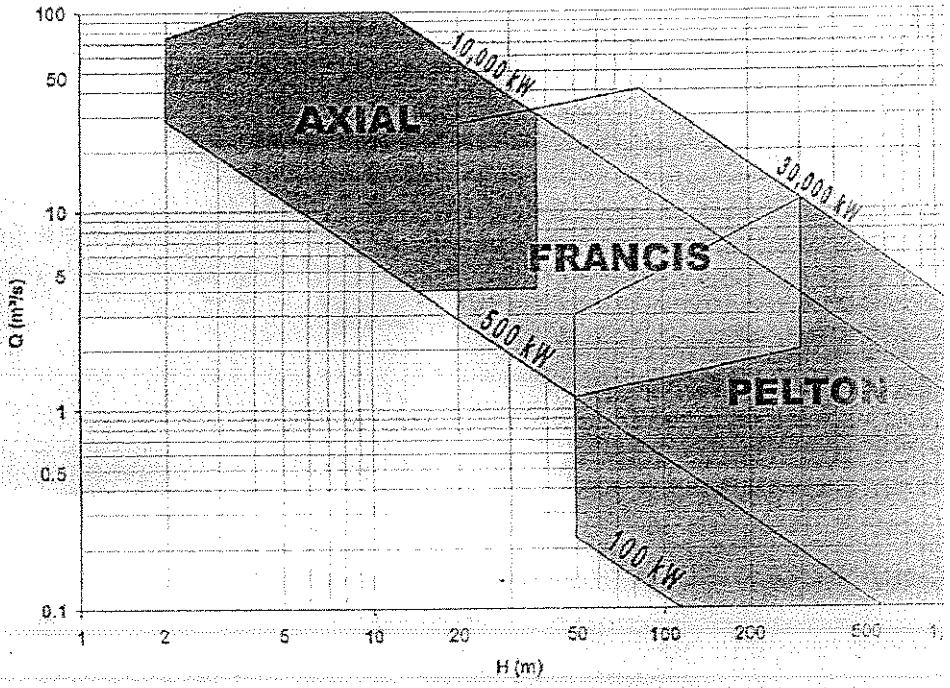
For us, quality is the priority. All our sites around the world are qualified to ISO 9000 and handle their projects taking particular care to monitor the results of each phase of progress.

Products
Single source solution

Our COMPACT HYDRO program covers a wide application range with different arrangements. Due to the modular design special concepts have been developed resulting in optimized energy production, short delivery times, reduce site erection based upon workshop pre-assembling and minimizing civil construction costs.

Application range

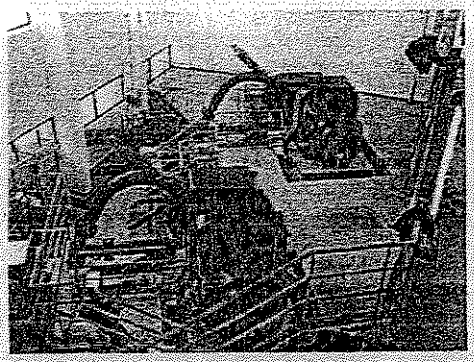
Head	H	up to	1,000 m
Flow	Q	up to	100 m³/s
Output	P	up to	30 MW

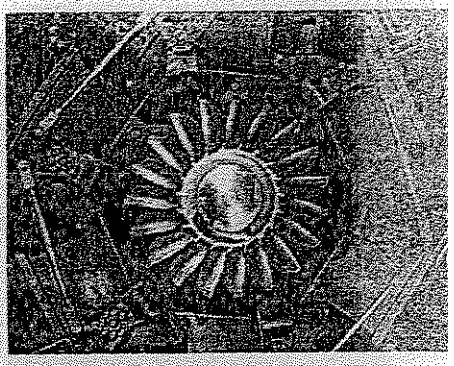


Pelton Turbines

Technical data:
- Head up to 1,000 m
- Output up to 30 MW

We provide a full range of Pelton units to match all high-head applications:
- Horizontal axis with 1 to 3 nozzles
- Vertical axis with 2 to 6 nozzles
- Inner or outer actuated nozzles

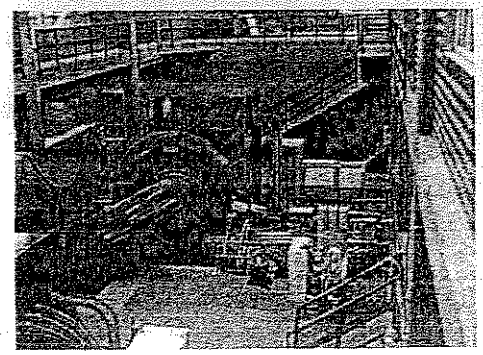


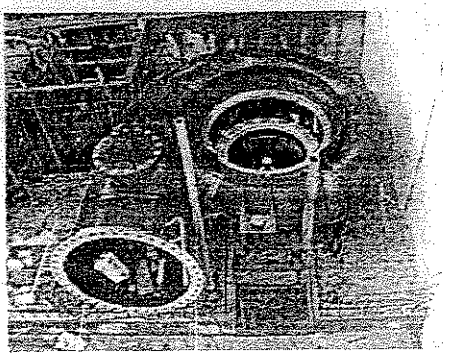


Francis Turbines

Technical data:
- Head up to 300 m
- Output up to 30 MW

We can meet all specific requirements with customized units based on an extensive set of modules including:
- Single or double discharge runners
- Horizontal or vertical axis
- Spiral or flume intakes





Axial-Flow Turbines

Technical data:

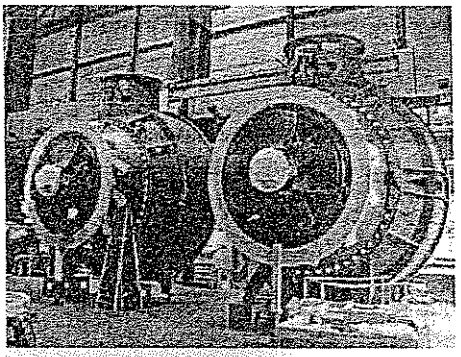
- Head up to 35 m
- Output up to 10 MW

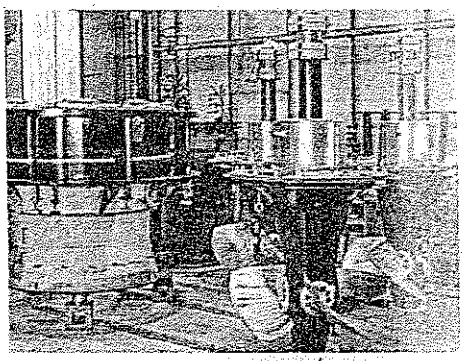
Our program includes:

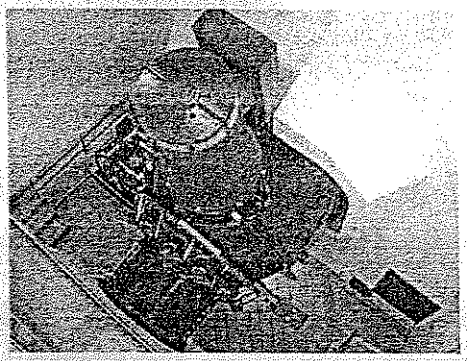
- 3 to 6 bladed runners
- Double or single regulated
- Horizontal, inclined or vertical axis

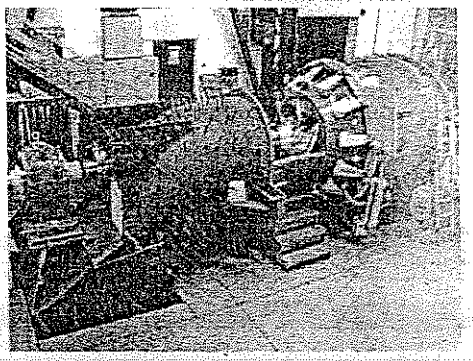
The complete range is covered:

- Belt driven
- Bevel gear driven
- Bulb
- ECO Bulb™
- PIT
- Spiral case or semi spiral case Kaplan
- S-Type
- CAT





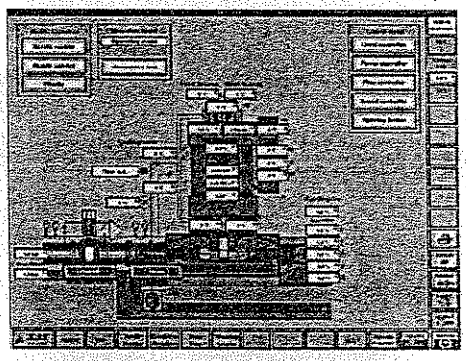


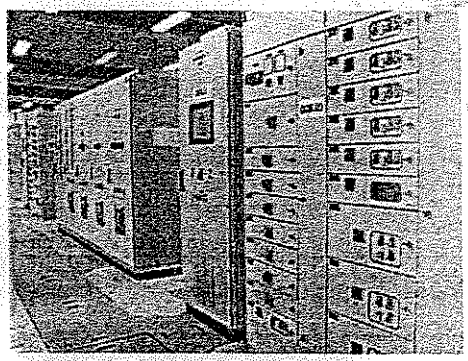


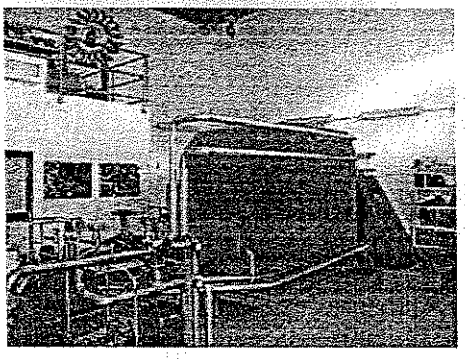
Electrical equipment

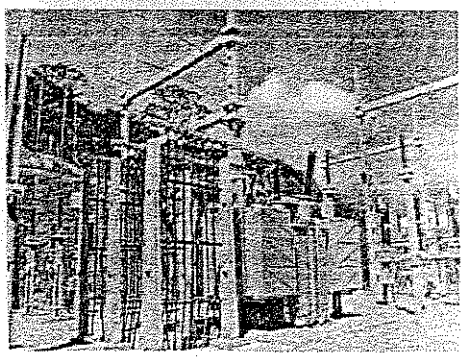
Following the modular concept of the mechanical equipment, we also implement the same approach with the electrical balance of plants:

- Generators with AVR
- Control-protection-measuring system
- Digital turbine governor
- SCADA
- AC-DC distribution
- Auxiliary transformer
- LV and MV-switchgear
- Main transformer





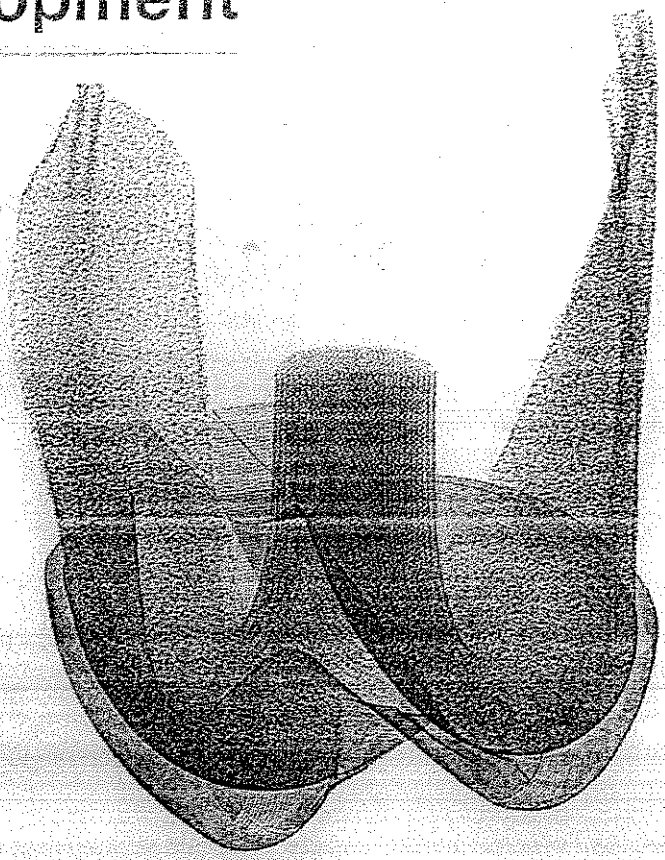


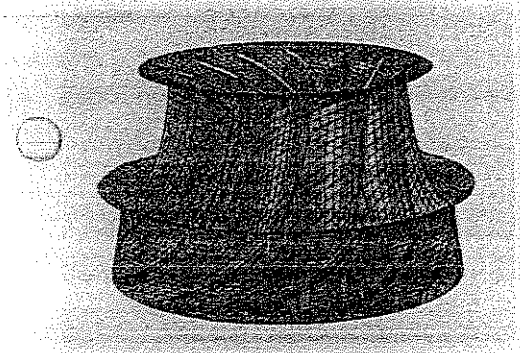


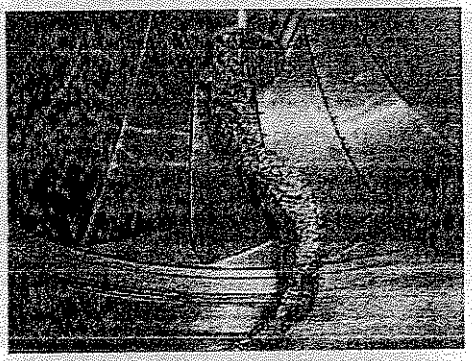
Research & Development

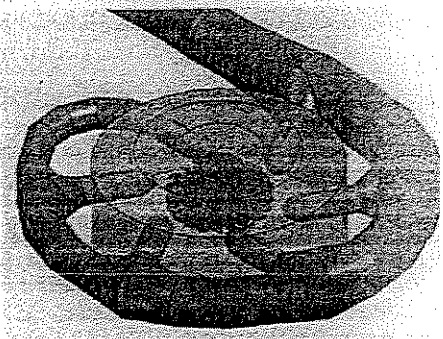
Our efforts in research & development keep us at the front line of innovation to offer our customers maximum user benefit.

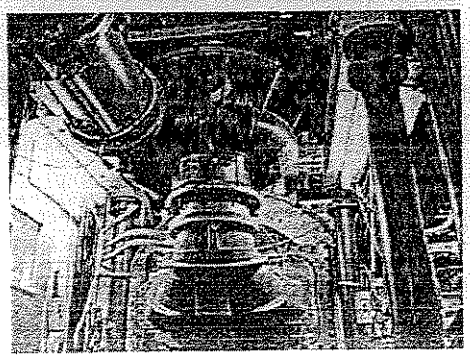
Research findings from our model test laboratories, numerical flow simulation, electronics and electro technology innovations are all combined into optimal overall solutions. It is this comprehensive approach to product innovation which keeps the COMPACT HYDRO range on the forefront of technology.

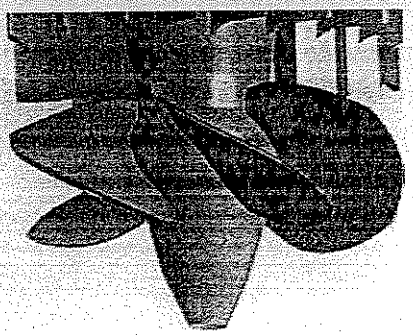


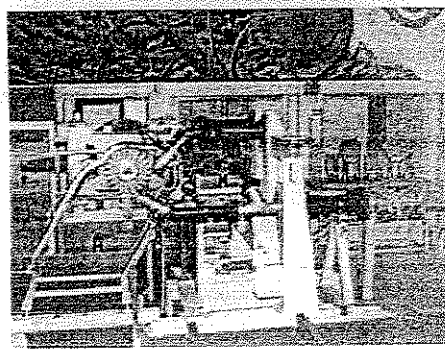












In harmony with nature

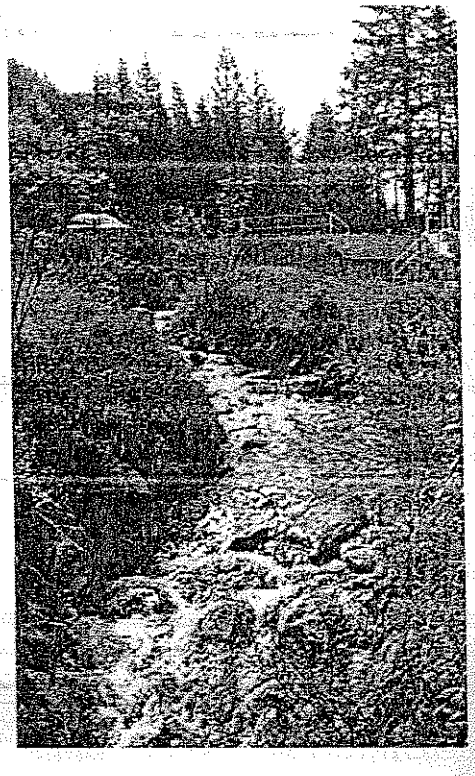
In the face of gradual global warming and increasing environmental pollution, nations worldwide have joined forces to reduce emissions of greenhouse gases. These are considered as a possible cause of climate change and measures to curb the use of scarce commodities are to be implemented.

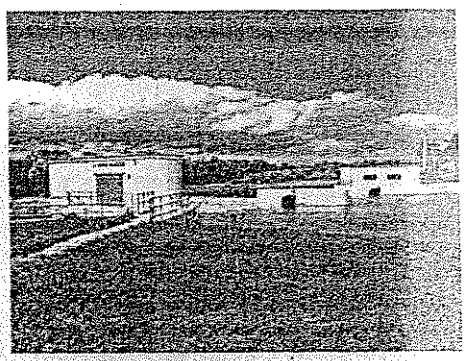
As an environmentally friendly and renewable energy source, hydropower is increasingly becoming a focal point of global interest. For general public acceptance today, hydroelectric power plants must unquestionably meet environmental and water protection requirements.

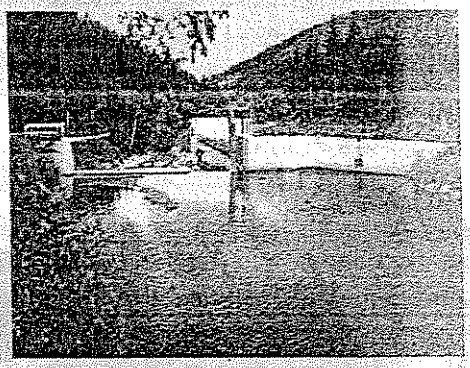
Hydropower is the leading source of renewable energy, supplying the world with about one-fifth of its electricity. It is clean, leaves behind no waste, and neither emits pollutants nor significant amounts of dangerous greenhouse gases. Every kWh generated from hydropower compared to fossil sources of energy prevents about one kilogram of CO_2 emission.

We strongly commit to the sustained protection of the environment in parallel with economic growth and social progress.

COMPACT HYDRO plants harmonize optimally with the environment also in areas where landscape protection takes priority.

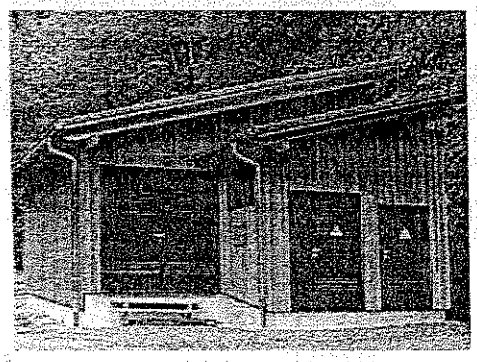


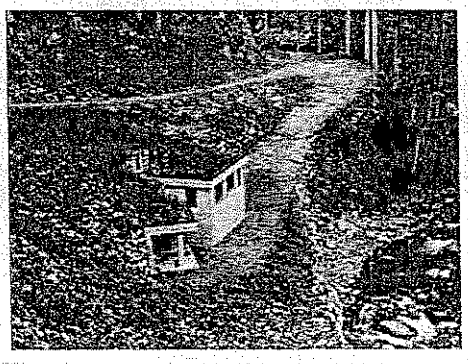


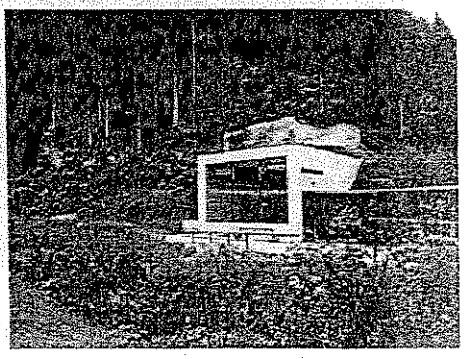


Ecology-oriented

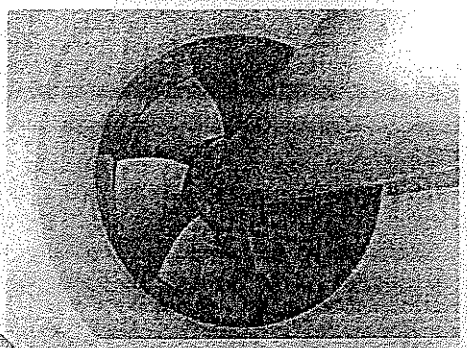
Our COMPACT HYDRO ranges proves that water power can become even more environmentally compatible. Our latest designs pays particular attention to eliminating water pollution.



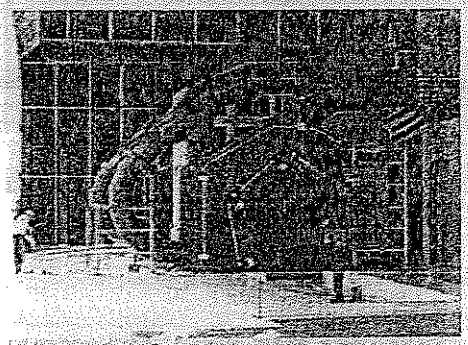




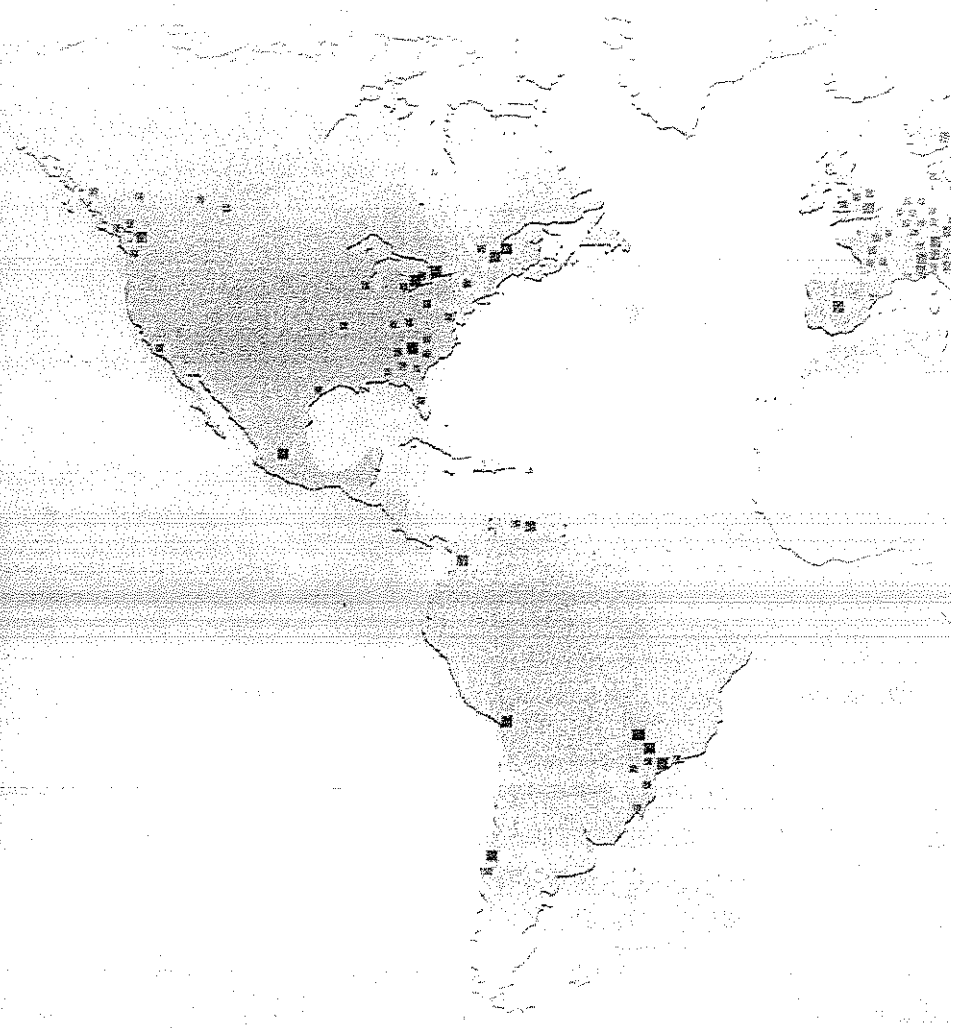
The global world leader in COMPACT HYDRO

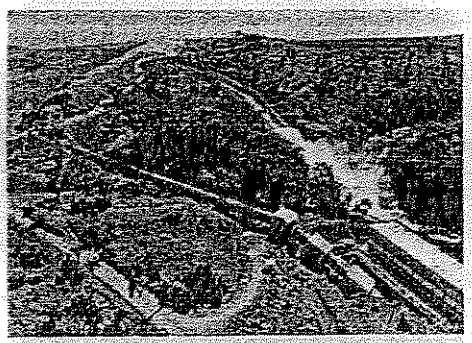


UMBATA HPP, Canada
2 Axial S-Type
D_1 = 2,200 mm
P = 2 x 11.7 MW, H = 34.1 m

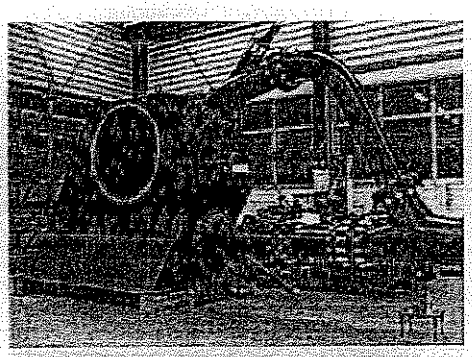


LAS VACAS II HPP, Guatemala
2 horizontal 3 nozzle Pelton
D_1 = 1,310 mm
P = 2 x 10.7 MW, H = 285.6 m

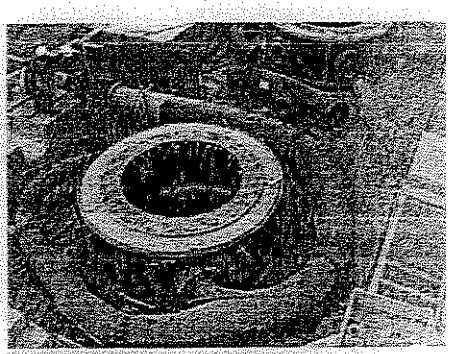




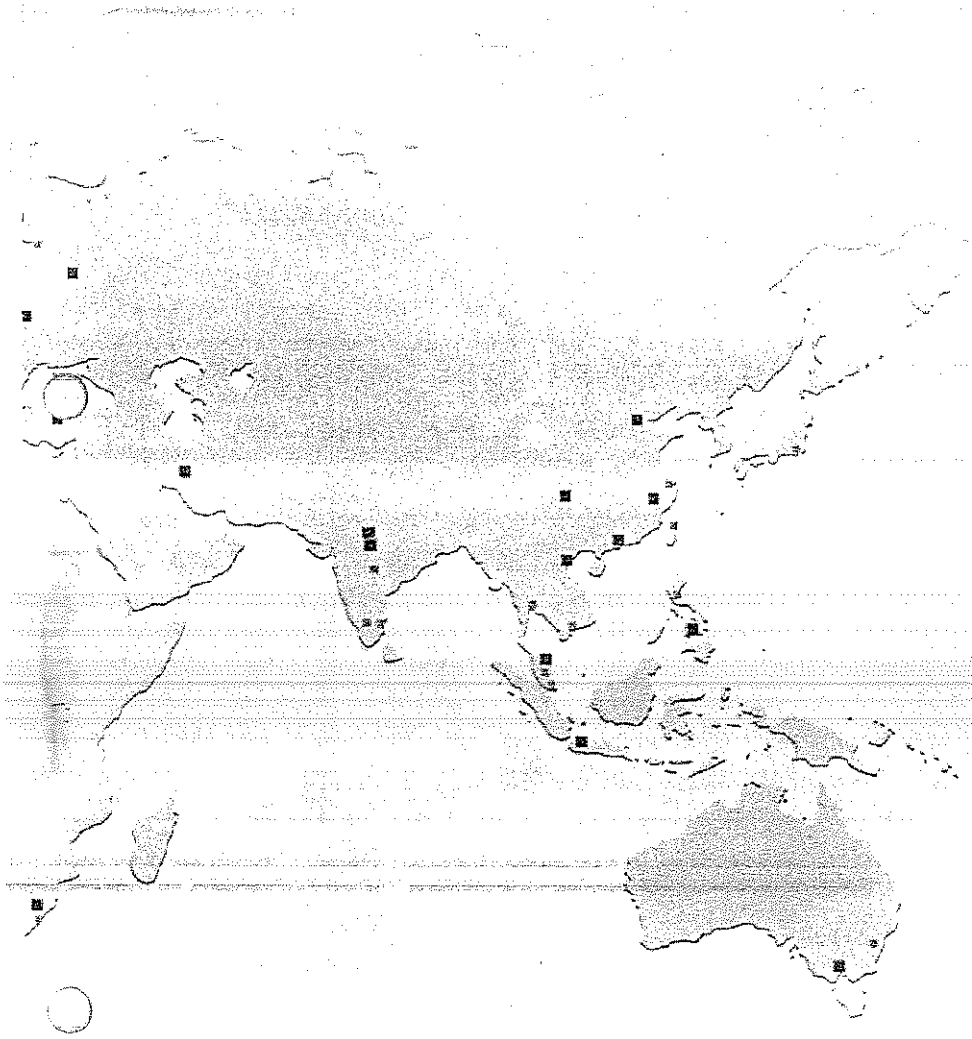
IRARA HPP, Brazil
3 horizontal Francis
D_2 = 1,650 mm
P = 3 x 10.5 MW, H= 31.5 m

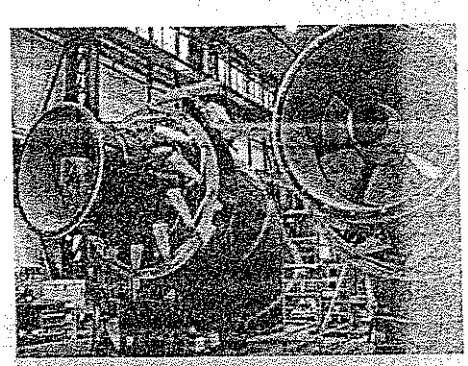


ELANDSRAND HPP, South Africa
1 horizontal 2 nozzle Pelton
D_1 = 675 mm
P = 3.8 MW, H = 620 m



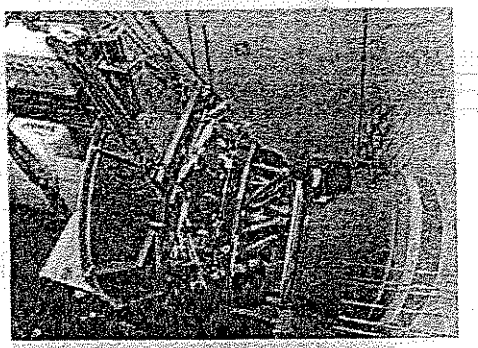
LAMAS IV HPP, Turkey
2 vertical 5 nozzle Pelton
D_1 = 1,210 mm
P = 2 x 10.8 MW, H = 325 m





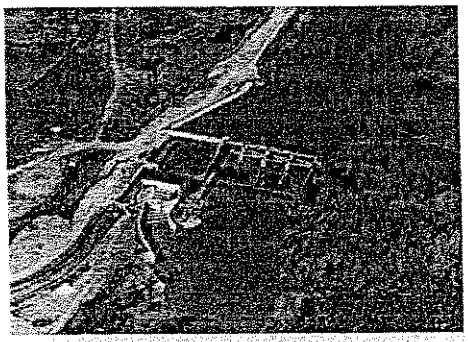
KRIEBSTEIN HPP, Germany

2 Axial CAT vertical
D_1 = 1,600 mm
P = 2 x 3.7 MW, H = 22.8 m



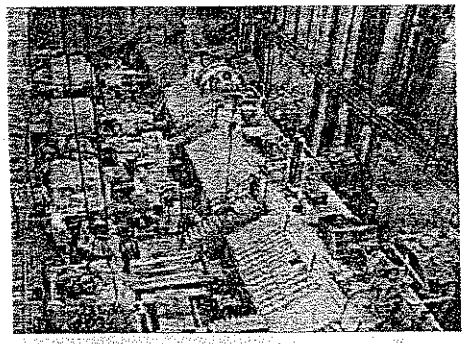
GSTATTERBODEN HPP, Austria

1 Axial Bulb
D_1 = 1,950 mm
P = 2.0 MW, H = 9.4 m



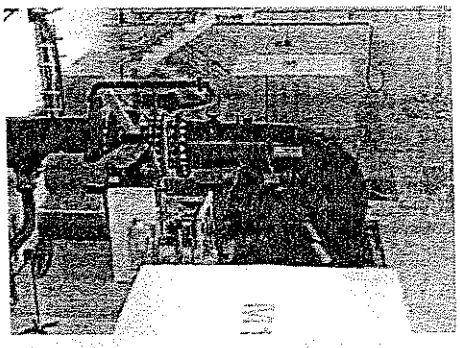
ELEOUSSA HPP, Greece

2 Axial PIT
D_1 = 3,150 mm
P = 2 x 3.3 MW, H = 5.7 m



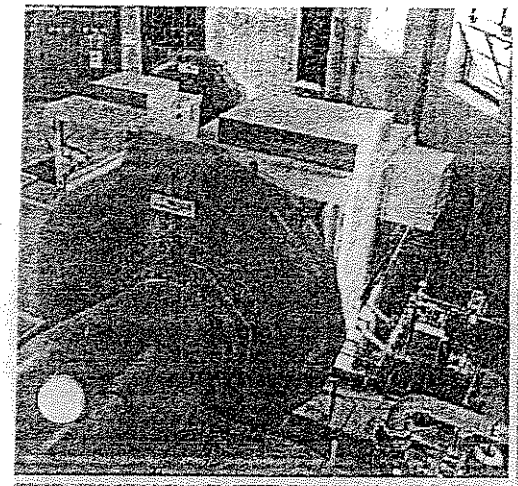
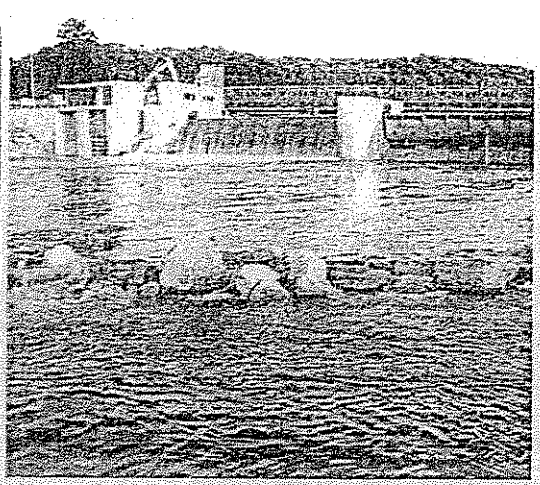
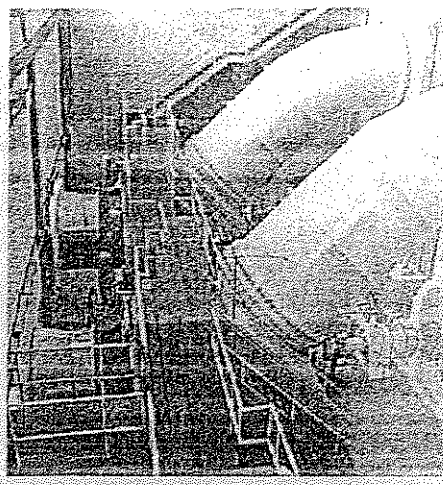
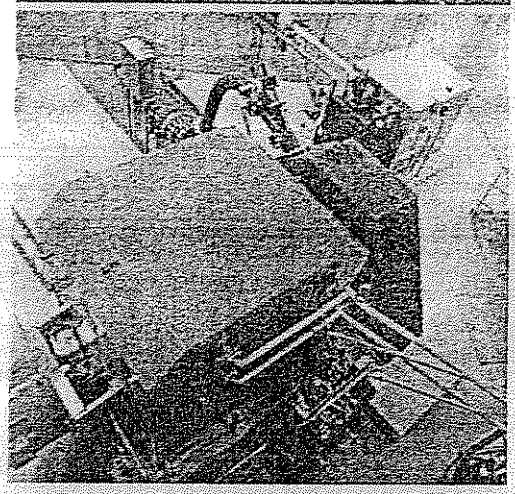
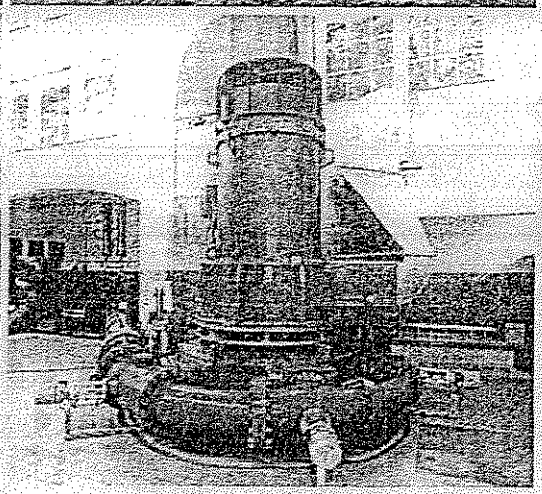
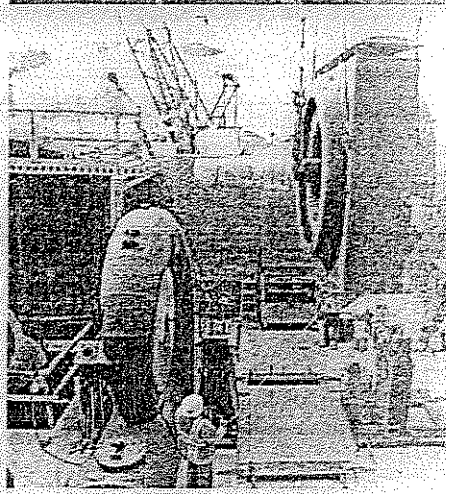
SAMAL HPP - India

5 Axial S-Type
D_1 = 2,800 mm
P = 5 x 4.8 MW, H = 11.8 m



THAC TRANG HPP, Vietnam

2 horizontal Francis
D_2 = 663 mm
P = 2 x 3.0 MW, H = 115 m

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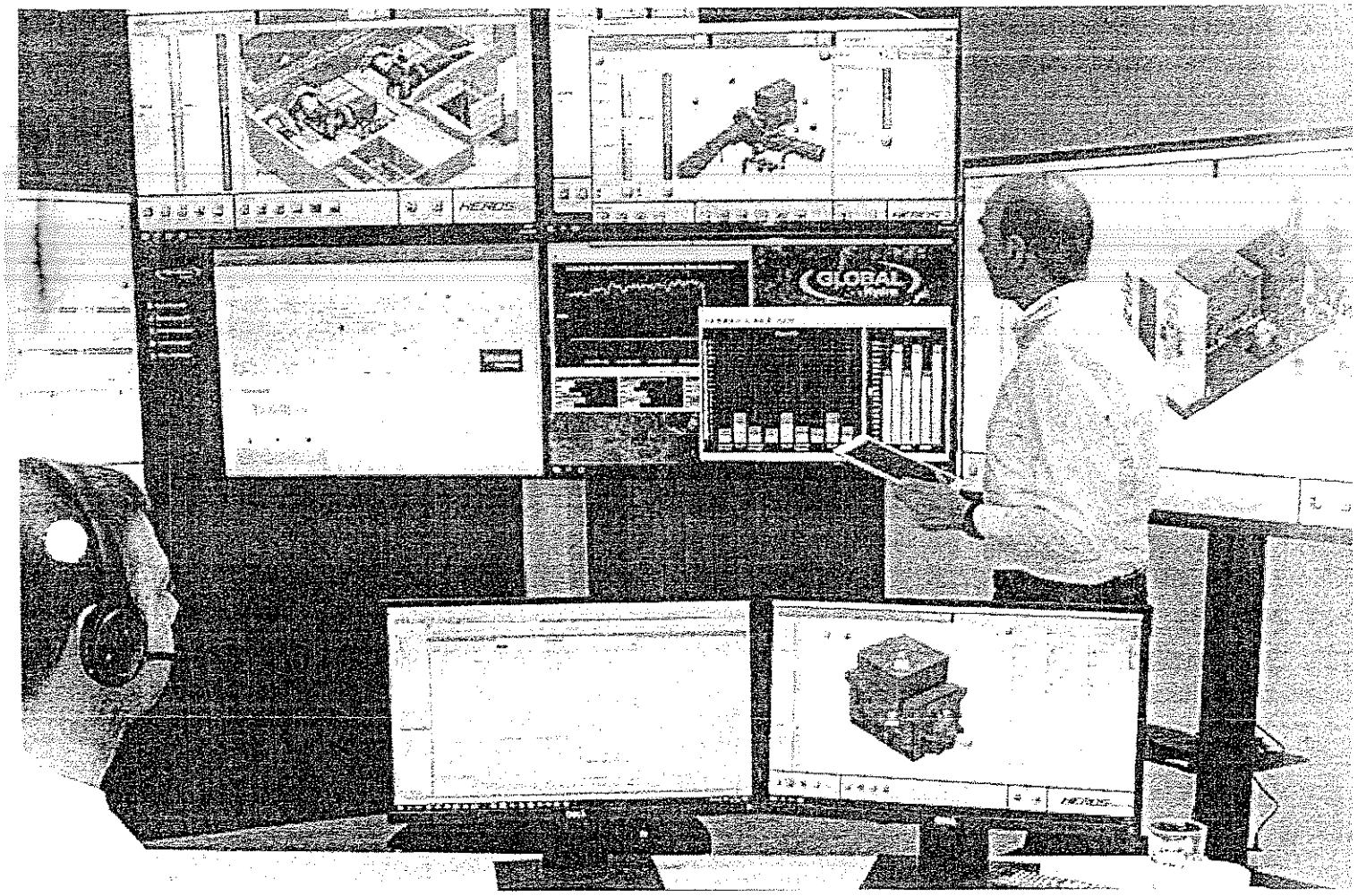
E-Mail: contact-hydro@andritz.com

GLOBAL Hydro

OCA (OPERATION CONTROL ASSISTANCE)
OUR PASSION - YOUR SUCCESS

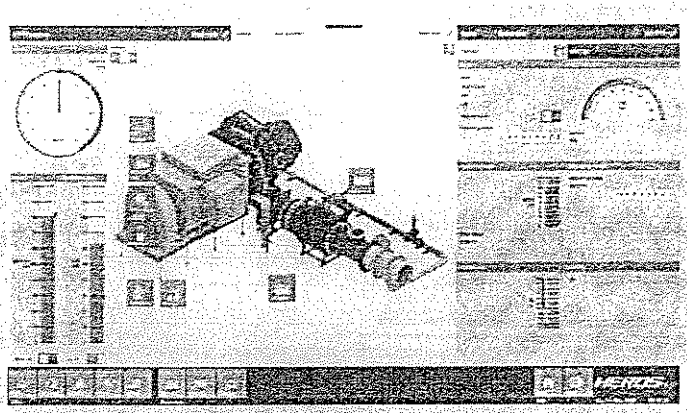
With OCA we offer professional support for your Powerplant and optimize it during operation. To facilitate this service we established a state of the art monitoring area in our Customer Service department in Niederranna.



EVERY ACHIEVEMENT BEGINS AT THE STARTING LINE

We carefully look after your power plant from ther very first moment - for the success of your investment!

OCA - INCREASE THE AVAILABILITY OF YOUR POWER PLANTS

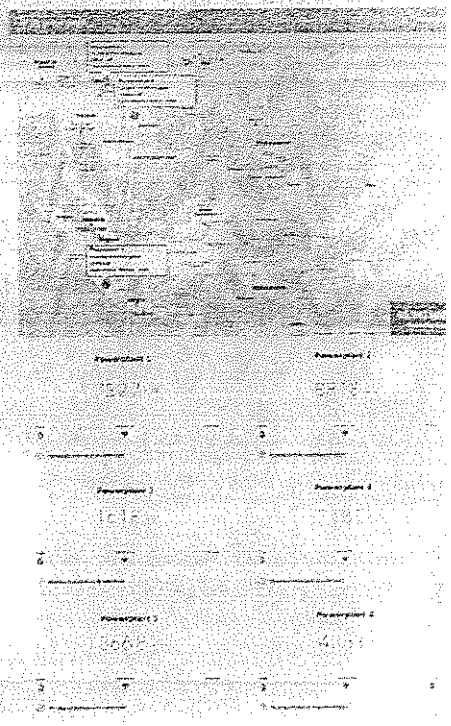


In accordance with the quality standards of GLOBAL Hydro we are always verifying and improving the offered products and services for our customers. A great innovation of GLOBAL Hydro is the implementation of the monitoring system OCA. This is another important step towards the early detection and therefore minimization of plant downtimes. In combination with our information system, faults are detected at an early stage and thus a very short reaction time and a high availability of your power plant is guaranteed.

YOUR BENEFIT AS CLIENT OF GLOBAL Hydro

OCA starts already during commissioning respectively the first tests and escorts the hydro power plants of our clients for six months from which the following benefits arise for our clients:

- Adjustments and readjustments of the parameters during and after commissioning
- Data analysis, optimization and recommendations for improvements during operation
- Early detection of wear and tear to avoid costly downtimes
- Fast reaction times through our failure alarm system (e-mail or text message) in combination with HEROS Connect
- Automatized monthly reports on the status of the power plant including suggestions for optimizations



AVAILABLE PACKAGES

- OCA as an included service for of 6 months during and after commissioning
- OCA as part of a service contract
- OCA for particular cases (eg. holidays, ...) during an agreed time period

www.global-hydro.eu

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Member of E-Energies Group

10.1 GENERAL

This chapter briefly describes the construction planning and management of the project. Based on the project scope, construction material quantities, sequence of activities and their dependence on the hydrological conditions, the LCC Hydropower Project is planned to be constructed in 36 months.

The activity schedule is presented in **Figure – 10.1**, showing the duration and sequence of activities spanning the entire period of 36 months. The schedule indicates major construction stage activities and is based on the assumption that the project shall be awarded to a qualified constructor on EPC basis having similar experience in the construction of hydraulic structures and powerhouses and with the experience in the design, manufacture or procurement of hydropower generating equipment.

10.2 CONSTRUCTION PLANNING

The LCC Hydropower Project is planned to be constructed in a period of 36 months. This includes Civil, Electro-mechanical, Transmission and Interconnection works from installation to commissioning. The pre-construction activities shall precede the construction activities of the LCC Hydropower Project.

These include:

- Submission of Updated Feasibility Study and Approval by PPDB.
- Approval of Tariff and Power Generation Certificate by NEPRA.
- Issuance of NOC by the Punjab, EPA.
- Appointment of Project Implementation Consultant.
- Acquisition of Land.
- Tender Design, Documents and Tendering.
- Award of EPC Contract.

Major activities to be undertaken and estimated time to be dedicated for each of these are elaborated in **Table – 10.1** as under:

Table – 10.1: Time Line of Major Activities

Sr. #	Activity	Days
1.	Investigations and Detailed Design by EPC Contractor	180
2.	Mobilization/Installation of Temporary Facilities	45
3.	Construction of Residential Colony	90
4.	Excavation of Temporary Diversion Channel	60
5.	Construction of Upstream and Downstream Coffer Dams	30
6.	Excavation of Powerhouse and Spillway Foundations	150
7.	Construction of Powerhouse and Spillway Substructure	270
8.	Construction of Powerhouse and Spillway Superstructure	210
9.	Manufacturing of Turbines, Generators, other E&M Equipment and Spillway Gates	600
10.	Delivery at site	120
11.	Installation of Turbines, Generators & other E&M Equipment	240
12.	Transmission & Interconnection at Wazirabad Grid Station	120
13.	Testing and Commissioning	30

The dedicated time of 36 months for the above listed activities is to be staggered, shared and distributed in such a way that the project works are executed, completed and commissioned within the period of 36 months. This task is to be achieved through the construction management. Experience shows that valuable time is lost due to poor construction planning. In some cases, the construction plant idles due to lack of essential spares. In other cases, the material delivery is not well timed to allow uninterrupted execution of site works. Important considerations for timely completion of the project are:

- Assess requirements of construction material, skill and number of construction workers and types of tools and plants.
- Arrange logistic supports for an efficient supply chain.
- Minimize idling of plant and resources through critical paths.
- Maximize work output by keeping the plant and resources at optimum level of performance and operation.
- Anticipate problems and analyse them for their likely time impacts.
- Suggest contingent plans and means to ward off problematic situation.

10.2.1 Suggested Methodology

It is assumed that one EPC Contractor would execute the entire Civil, E&M and Structural Steel works. Single source EPC Contract has many advantages over split scope contracts. The EPC Contractor may, however, engage sub-contractors for specialized jobs that include supply of materials, powerhouse electrification, Transmission Line/Interconnection etc.

The site works shall be executed in accordance with the construction management plan. The construction activities include care and handling of water, bulk excavation and disposal, concrete mixing and placing and structural steel works. For preparation of quality concrete, batching plant shall be used. The construction schedule shall be coordinated with the local irrigation authorities to avoid disruption to the canal flows for irrigation purposes.

Working conditions at the project site are expected to be excellent. Care and handling of water in the excavated area may be a construction hazard for which extra resources would be needed.

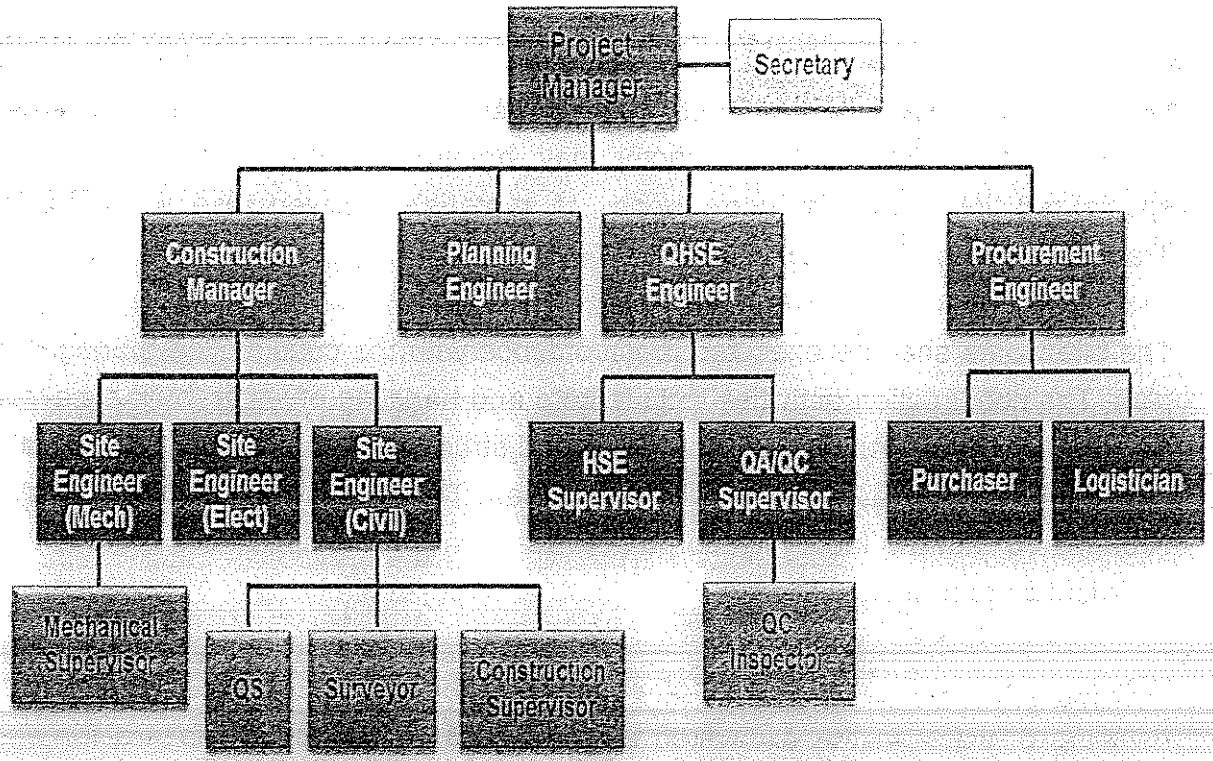
10.2.2 Construction Means

For all works, conventional construction methods shall be applied. Surface excavations require conventional earth moving equipment only. The construction work shall start with the excavation of temporary diversion channel on the left side of the canal. The majority of the work force shall be local, with site laborers and semi-skilled labor available from the project area and skilled labor also coming from the region as well as from other parts of the Country. Foreign experts shall be hired for special tasks, especially that associated with installation and testing of major equipment (if necessary).

10.3 PROJECT ORGANIZATION

The construction of the project could be conveniently managed with an efficient, professional and dedicated managerial team. The project organization proposed for successful execution of the project is given in **Figure - 10.1**.

Figure - 10.1 Project Organization



The above staff shall have the roles and responsibilities as under:

- The overall responsibility of the management of the entire project organization shall rest with an experienced professional, who has extensive exposure on successfully handling the project related issues. He shall act in the capacity of Project Manager. He shall be assisted by Construction Manager, Planning Engineer, QHSE Engineer and Procurement Engineer.

- The Construction Manager shall deal with the day to day construction issue and ensure compliance with the design and specification codes. He would maintain close liaison with the Irrigation Department and monitor the quality and site productivity. The Construction manager shall have extensive experience on construction related problems with a capacity to make a sound judgement for quick decision making.

- The Procurement Engineer is a direct assistant to Project Manager, who shall assist him in preparation of an inventory of material for smooth execution of works at site. He shall also be responsible for preparation of

supply/delivery orders of all kind of materials, spares, tools etc. at site.

- The QHSE Engineer is also a direct assistant to the Project Manager, who shall assist him in resolving day to day problems regarding safety, quality and environmental hazards at site.

- The Planning Engineer is also a direct assistant to the Project Manager for scheduling the site activities and preparation of monthly progress reports.

- Down the line of organizational hierarchy are the site engineers each for Civil and E&M works. The site engineers shall be responsible for execution of works in accordance with the specifications and schedule of progress. The site engineers shall be assisted by construction supervisors.

10.4 SCHEDULE OF ACTIVITIES

10.4.1 Investigations & Detail Design

The detailed engineering design, drawings and related investigations shall be the responsibility of EPC Contractor. About 06 months have been envisaged for additional investigations, working out the plant size and final layout for review and approval by the sponsor and PPDB. Side by side the contractor shall move for procurement of Turbines, Generators & other E&M equipment.

10.4.2 Mobilization

Temporary roads shall be required to the disposal area, as well as temporary and permanent camps. Aggregate processing and concrete batching facilities shall be erected and operated by the contractor. The Contractor shall also construct camps, offices and other utilities with sufficient work area.

At project completion, the roads to all permanent facilities and relocated public road shall be upgraded and finished with proper drainage, paving and shoulders. The estimated time for mobilization is 1.5 month.

10.4.3 Temporary Diversion Channel

Construction of temporary diversion channel shall be initiated as soon as possible. Once the temporary diversion channel is excavated, the upstream and downstream cofferdams shall be constructed during canal closure period. This shall allow construction activities of the powerhouse and spillway to commence. The excavation of temporary diversion channel is estimated to be completed in 02 months.

10.4.4 Powerhouse and Spillway

Upon enclosing the powerhouse and spillway site, a time dense activity program must be carried out to excavate, install dewatering system and treat the foundation. On completion of excavation and foundation treatment, the steel reinforced base concrete shall be poured and subsequent concrete works shall be completed leaving spaces for second stage concreting which shall be placed during installation of embedded part for turbine/draft tubes/gates/stoplogs.

The superstructure shall be accordingly completed in accordance with the planned sequence. The draft tube liner and turbine embedded part shall be available for installation during the second stage concreting. The powerhouse and spillway substructure and superstructure does not require unusual construction techniques or methods for reinforced concrete construction.

The powerhouse roof shall be constructed along with the installation of powerhouse crane, which can be used for turbines, generators and installation of other E&M equipment. Backfilling around powerhouse and spillway shall be done upon completion of up and downstream retaining walls. All these activities related to powerhouse and spillway construction shall require 21 months.

In equivalent with installation of the turbine and generator, the other electromechanical equipment and controls shall be installed. The other architectural work, parking and security shall be completed parallel to testing and commissioning of the plants.

Upon completion of spillway along with gates, canal flows shall be diverted toward the powerhouse/spillway. Flows through the turbines shall be stopped by placing stoplogs upstream and downstream.

10.4.5 Procurement and Installation of Major Equipment

The scheduling and procurement of major equipment shall be the responsibility of the EPC contractor. Procurement of major equipment requires careful planning so that installation can be finished prior to desire commissioning date.

a. Turbine, Generator & Other E&M Equipment

The critical items are the procurement of turbines and generators which needs to be planned carefully to avoid delay in the project. The process of procuring hydropower turbines, generators and other E&M equipment shall take about 20 months, whereas, about 08 months shall be required for installation of these equipment.

b. Switchyard Equipment

In parallel of procurement of E&M equipment for powerhouse, transmission line and interconnection equipment shall be procured. The transmission facility and interconnection shall require 04 months. However, the transmission line shall be constructed by Power Purchaser.

The switchyard equipment is not a critical task. The equipment can be easily procured from the local market. Installation shall require no more than 2 months.

c. Spillway Gates

Installation of gates is also not a critical path of supply for construction completion. Once the spillway civil works are completed, the embedded parts installed, the gates shall be installed. Testing of gates shall be conducted parallel to turbine testing. The fabrication of the gates needs to be started parallel with civil construction.

10.4.6 Testing and Commissioning

Testing and commissioning includes testing of all equipment and facilities, operational test of electromechanical equipment under load conditions (both dry and wet condition) and safety tests. The activities require 01 month after erection of the E&M equipment.

10.4.7 Miscellaneous Works

The miscellaneous works include rectification of punch list items (if any), dumping of the excavated earthfill and landscaping works. The excavated material can be spread on the canal banks and tracks throughout along the Project area to strengthen them, filling of low lying areas and landscaping of the Project area.

10.5 CONCLUSION

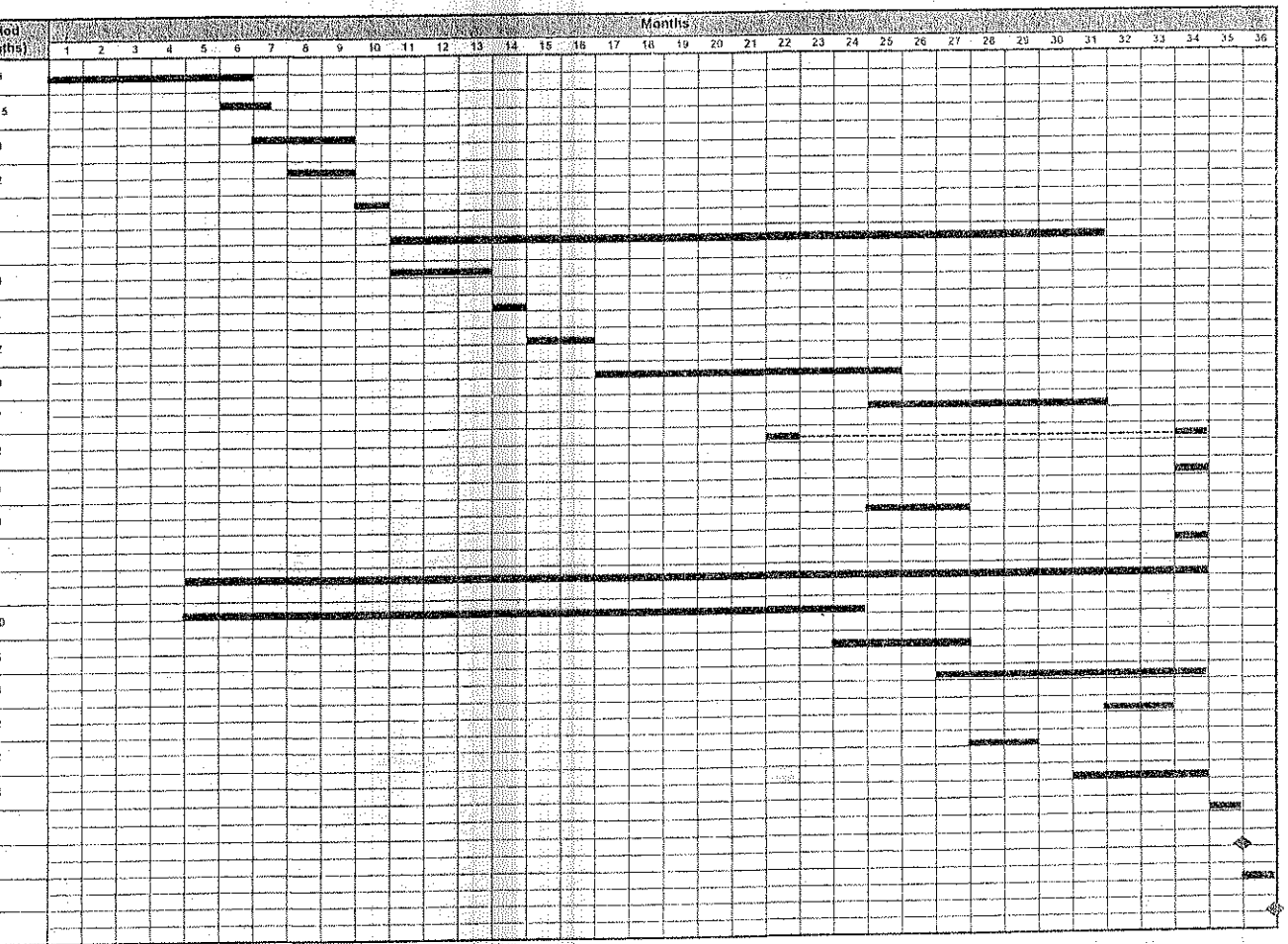
- Based on the project scope, construction quantities, sequence of activities and their dependence on expected canal closure, the total construction period of 36 months is estimated.
- It should be noted that construction of temporary diversion canal must be finished well before January to use the closing time for diverting the main canal and to start powerhouse and spillway construction.
- Special consideration should be given to the critical tasks related to the canal closure and schedule delivery of Turbines, Generators & other E&M equipment to site.

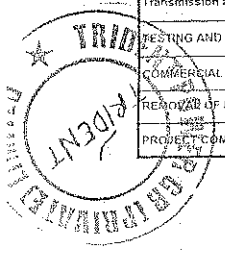
Figure - 10.1

LCC HYDRO POWER PROJECT

ACTIVITY SCHEDULE

ACTIVITY	Period (Months)
INVESTIGATIONS AND DETAIL DESIGN BY EPC CONTRACTOR	6
MOBILIZATION / INSTALLATION OF TEMPORARY FACILITIES	1.5
CONSTRUCTION OF RESIDENTIAL COLONY	3
EXCAVATION OF TEMPORARY DIVERSION CHANNEL	2
CONSTRUCTION OF U/S AND D/S COFFER DAM	1
POWERHOUSE & SPILLWAY (CIVIL WORKS)	
Excavation 1st Stage	3
Installation of Dewatering System	1
Excavation 2nd Stage	2
Construction of Powerhouse and Spillway Substructure	9
Construction of Powerhouse and Spillway Superstructure	7
HEADRACE (Banks Raising & Slope Protection)	2
TAILRACE (Excavation & Slope Protection)	1
CONSTRUCTION OF SWITCHYARD	3
REMOVAL OF U/S AND D/S COFFER DAM	1
E&M WORKS	
Manufacturing of Turbines, Generators, Other E&M Equipment and Spillway Gates	20
Delivery at Site	4
Installation of Turbines, Generators and Other E&M Equipment	8
Installation of Spillway Gates	2
Installation of Switchyard Equipment	2
Transmission and Interconnection at Wazirabad Grid Station	4
TESTING AND COMMISSIONING	1
COMMERCIAL OPERATION	
REMOVAL OF DEFECTS AND MISC WORKS	1
PROJECT COMPLETION	





01. PROJECT BACKGROUND

Punjab Power Development Board (PPDB) issued a letter of Intent (LOI) to Trident Power GR (Private) Limited (The Sponsor) for the development of LCC Hydropower Project in the Punjab Province of Pakistan. In this connection, M/s Aipel was engaged by the sponsor to carry out the feasibility study and evaluate the energy and power potential of the Project site on the basis of available historic data and existing site conditions. The generated electricity shall be sold to GEPCO. The feasibility study has been approved by the panel of experts (POEs) of PPDB. Besides this, initial environmental examination (IEE) from Environment Protection Agency (EPA), Government of Punjab and Interconnection study from Gujranwala Electric Power Company (GEPCO) has been approved. This document is being furnished as part of Application being submitted to National Electric & Power Regulatory Authority (NEPRA) for the acquisition of Power Generation License and the measures which shall be taken by the Sponsor during operation & maintenance of the power plant.

The Project site is located near Wazirabad in District Gujranwala of Punjab Province. The powerhouse is proposed at RD 1+500 on Lower Chenab Canal (LCC), District Gujranwala. The Project area can easily be accessed through railway and road and are linked with Lahore through Lahore-Rawalpindi Highway (N5).

02. INTRODUCTION

Usually canals in Punjab carry lot of silts and clay with flow and that is why canal closure and maintenance is carried out at LCC from 27th December till 16th January each year. The power plant proposed at LCC at RD 1+500 shall require maintenance for civil as well as electromechanical works and the same has been addresses in this document accordingly and shall be taken care of during operations of the plant. Furthermore, it is experienced that even after careful project planning and good quality control measures from construction to commissioning, unforeseen problems do occur in service resulting in unplanned outages / low generation and load shedding etc. A contributing factor to these operational problems is the fact that hydro power equipment and plant is custom built. The equipment cannot be fully assembled or tested in a factory before sending it to site.

Maintenance activities at predetermined time intervals shall be conducted in order to ensure the following:

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- Quality and reliable operation of equipment in the service environment through planned, periodic inspection and checking of components and systems together with replacement or rectification of parts wherever required.
- Maximum availability of equipment and a minimum of unplanned shut downs by using planned / periodic shutdowns to inspect all equipment (serviceable and non-serviceable).
- Eradication of operational problems by a timely analysis of the cause of faults / problems and replacement of short term solutions by long lasting and permanent ones.

03. PREVENTIVE MAINTENANCE OF HYDRO TURBINE

In order to achieve above objectives of maintenance, time has to be allotted every year for each machine. Normally the periodicity and the procedure for maintenance is recommended by the manufacturer of the equipment. However, maintenance is required according to the following guidelines:

3.1 ROUTINE MAINTENANCE

Normally there will be daily, weekly, monthly and quarterly checks as per the maintenance schedules. These checks are necessary for controlling any change in the installed clearances, commissioning characteristics etc. connected with the performance of equipment. Rectification and adjustment wherever required should be carried out in order to arrest any deterioration of the equipment.

3.2 DAILY MAINTENANCE CHECKS

Foundation Parts and Expansion Joints

Check for any leakage in draft tube manholes, spiral casing manhole, expansion joint.

Vacuum Breaking Valve

Check the working of both vacuum breaking valve and see that there is no abnormality in the springs, seats etc.

Water Seal and Air Seal

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Check the position of water leakage around the water seal and check that there is no excessive splashing and water level do not rise in top cover.

Turbine Guide Bearing

- Check the oil level (stand still machine/running machine).
- Note the temperature of bearing and check that the temperature of oil and guide bearing pads are within limits.
- Note the maximum and minimum temperature of the previous day.
- Check for any oil leakage from the bearing housing and check that oil is flowing above the bearing pads.

Guide Apparatus

- Check any leakage from GV servomotor and its piping.

Oil Leakage Unit

- Check any leakage from pipe line joints.
- Check its satisfactory running on 'Auto'. Top Cover Drain System:
- Main supply of 'ON' for DPM.
- Vibration noise in the pump motor.
- Any leakage from the water piping.
- Working and water pressure of the ejector.

Centralized Grease Lubrication System

- Check for any leakage from grease pipes, unions and nipples.
- Check grease container and fill grease, if required.

Oil Header

- Check from Perspex sheet manhole any splashing of oil from top and bottom bush.
- Check any oil leakage from the joints.

- Note the pressure difference of opening and closing side of runner. Oil Pressure System:
- Check if there is any abnormal sound in the running of the motor and pump unit of OPU.
- Check the oil level in pressure accumulator.
- Check any oil leakage from oil piping and its valve.
- Check for overheating of motor.
- Note the timing of OPU pumps running.

Mechanical Cabinet of Governor

- Pressure in transducer.
- Check any oil leakage from joints of piping.

3.3 WEEKLY MAINTENANCE CHECKS

- Greasing of guide vanes and servomotor with centralized grease lubrication system and manually.
  - Oil in the gear box shall be checked.
  - Check for any leakage
  - Working of end pressure relay and solenoid valves, if defective, should be reported.
- Cleaning of OPU filters
- Cleaning of throttle filters in the governor mechanical cabinet.
- Cleaning of governor compressor air filters and checking of oil levels.
- Checking physically oil of OPU of the running machine after sample taking through the sampling cock and do the crackle test for detecting presence of water. Take remedial measures. 6. Check oil level of all the bearings. Check wobbling of shaft at coupling flange and at oil header servo-tube.

3.4 MONTHLY MAINTENANCE CHECKS

All the checks covered as part of the weekly maintenance are also carried out as part of the monthly check. In addition to these checks, more attention is paid and short shutdowns, if required, for rectification are taken.

3.4.1. ANNUAL PREVENTIVE MAINTENANCE OF HYDRO TURBINES

After successful running of plant for about one year, a few weeks are required to inspect rotating parts, control equipment and measuring instruments and to analyze the cause of changes in the performance characteristics, if any. Modify, repair or replace (wherever required) worn out parts in order to prevent unplanned outages of plant at later date. After every five years it is necessary to inspect the machine more critically for abnormalities like fatigue defects or excessive wear and tear of some parts or any change in original parameters/clearances etc. This exercise becomes very essential in cases where performance level has been observed to have gone down in 5 years operation. The checks for annual maintenance specified for Ravi Hydropower Plant are enlisted below:

3.4.1.1 Foundation Parts:

i. Check condition of water path system. The damage due to capitation and wear to be rectified.
ii. Check painting of spiral casing.

3.4.1.2 Runner:

i. Check the condition of the surfaces of the runner hub and the blades. The damage due to cavitations & wear to be rectified by welding and grinding.
ii. Check the runner blade seals by pressurizing the system. Change seals if necessary. No oil leakage is to be allowed.
iii. Check the runner sealing for hermetic tightness, leakages of water in the runner hub is not to be permitted.

3.4.1.3 Guide Apparatus:

i. Check the presence of rubber sealing cords and the tightness of the rubber sealing between the adjacent guide vanes in fully dosed position of guide apparatus.
ii. Change oil in the regulating ring.

iii. Replace damaged shear pins.
iv. Check cup sealing of guide vane journals and replace, if necessary.
v. Check the bushes of guide vanes and change the worn out bushes of guide vanes journals.
vi. Inspect the servomotor and change the seals, if these are worn out.

3.4.1.4 Guide Bearing:

i. Check the condition of rubbing surfaces of guide bearing. Clean the surface and polish it with the help of chalk powder.
ii. Adjust the clearances by moving the segments with the help of adjusting bolts.
iii. Thorough cleaning of housing if necessary.

3.4.1.5 Shaft Gland Seal and Air Seal:

i. Check the condition of rubbing surface of sealing rings. In case found damaged change the same.
ii. Check pipe lines and piping joints for any leakage if any, attend the same.

3.4.1.6 Emergency Slide Valve:

i. Check the functioning of emergency slide valve and the condition of inner surfaces.
ii. Swift return of the valve in its original position after emergency operation should also be checked.

3.4.1.7 Centralized Grease Lubrication System:

i. Check satisfactory working of CGLS system.
ii. Attend wherever fault is located.

3.4.1.8 Oil Header:

i. Measure clearances of upper and lower bushes, if found increased get the bushes replaced.
ii. Clean the oil bath.

iii. Check the rubber cord fixed below the guide to check any oil dipping on the exciter winding.

3.4.1.9 Oil Leakage Unit:

i. Check satisfactory working on Auto as well as manual.

ii. Clean the tank.

iii. Check the pipeline joints and valves for leakage, attend wherever necessary.

3.4.1.10 Oil Cooling Unit:

i. Check all the oil and water pipe lines for leakage and attend if necessary.

ii. Check satisfactory working of all cooling unit.

3.4.1.11 Governor Mechanical Cabinet:

i. Check filter and throttle if found damaged replace the same.

ii. Attend leakage of oil through pipe line joints and valves.

iii. Check auto rod setting, if found disturbed; set the same.

3.4.2. Turbine Auxiliaries

3.4.2.1. DPM

- Inspect top cover drain system, overhaul the ejector and drainage pumps.
- Check pipe lines and valves. Replace gaskets and other parts, if necessary.

3.4.2.2. Oil Cooling Unit

- Overhaul cooling pumps
- Attend all the valves and pipe lines for leakage.

3.4.2.3. Centralized Grease Lubrication System

- Overhaul greasing pumps ii) Check whole greasing lines. Replace worn out valves and gaskets etc.
- Check all the nylon pipes connected with the guide vane bushes. Replace damaged pipes.
- Check that all the guide vanes are receiving grease properly.

3.4.2.4. Oil Leakage Unit

- Check the oil leakage unit overhauls the pumps.
- Clean tank and check that float is properly working.
- Checking all the pipe lines and valves for leakages.

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04. REQUIREMENT OF EFFECTIVE MAINTENANCE

In addition to planning maintenance and implementing a suitable schedule (on the basis of seasonal water availability perhaps), the following items also require attention otherwise it may be difficult to keep to the schedules in practice:

- Man Power Planning and arrangement is essential as without experienced and skilled staff any maintenance programme may fail.
- Planning and arrangement of spares and consumable in advance so that time is not lost in re-commissioning the plant after the shut down.
- The maintenance engineers should have in his possession all the erection and commissioning log sheets documents to establish a record of installed clearances, parameters, alignment results, test characteristics of all the power plant equipment. These may be required at the time of diagnosis of the operational problems as well as defined maintenance purpose.
- Log sheets of the previous maintenance exercise carried out on the machines. These may be required to compare with the clearances / settings / characteristics achieved during present maintenance.
- History registers of all plant should be kept with records of all the abnormalities observed on the machine and details of action taken. This data can be used to as a guideline for future maintenance work at the power station.
- Some of the major problems encountered in the hydro turbines are damage in runners due to erosion, cracking and cavitations due pressure pulsation in draft tube, instability of operation at partial gate opening. Other serious issues include failure of turbine guide bearings, leakages of water through turbine guide bearings, leakage of water through guide vane seals and turbine gland seals.

7.5 MW Lower Chenab Canal Hydropower Project

Islamic Syndicated Long Term Finance Facility under SBP Scheme for Financing Power Plants using Renewable Energy amounting up to PKR 2,525 Million

INDICATIVE TERM SHEET ("ITS")

(Highly Confidential & Not to be disclosed to any Third Party)

Borrower	Trident Power GR (Private) Limited ("Trident" or the "Company").
Project	Proposed 7.5 megawatt ("MW") Lower Chenab Canal Hydropower Project (or the "Project").
Sponsors	There are four sponsors in the project company to be collectively referred to as the "Sponsors": 1. Zafar Ikram Shaikh (Spec Energy) – 26% 2. Fiaz Ahmed (Trans Tech Pakistan) – 25% 3. Yousuf Mehboob Khan (Trans Tech Pakistan) – 25% 4. Syed Hadi Ali Rizvi (Pak Carpet Industries) – 24%
Project Cost	PKR 3,367 Million
Debt to Equity Ratio	80: 20
Facility Limit	Up to PKR 2,525 Million.
Purpose	To finance the debt portion of the Project Cost.
Lead Arrangers & Structuring Agent	Pak Brunei Investment Company Limited ("Pak Brunei"). Pak Brunei may co-opt any other institution as it may deem necessary.
Lead Advisors	Awwal Modaraba ("Awwal").
Proposed Facilities	The debt portion may be provided under two facilities as given below, the aggregate of which will not exceed the total Facility Limit. **Facility I:** Islamic / Syndicated Long Term Finance Facility ("Facility I") proposed under State Bank of Pakistan ("SBP") Financing Scheme for Renewable Energy ("SBP Scheme") issued on July 26, 2019. Facility to be advanced will be on the terms of and subject to the availability of SBP Scheme at the time of financial close. **Facility II (if required)** Any debt portion which is not covered under SBP Scheme in Facility I will be arranged through separate financing by same lenders on proportionate basis.

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LENDERS	A consortium of financial institutions, including but not limited to the Lead Advisors & Arrangers, eligible to provide financing under the proposed Facilities.
FACILITY EFFECTIVE DATE	Facility Effective Date ("FED") is the date of first drawdown on which the Conditions Precedent to the Facility are satisfied, as specified in Facility Documents. If FED is not achieved within 150 days of the execution of the Facility Documents, the Facility would expire, unless extended in writing by the Participants.
TENOR	Twelve (12) Years including Grace Period from the FED.
GRACE PERIOD	Two (02) Years from FED in line with the Availability Period.
AVAILABILITY PERIOD	The Availability Period will commence from FED and extend upto COD or two (02) years, whichever is earlier during which the Facility will be available for drawdown. Any sums un-drawn under the Facility on the expiry of the Availability Period will stand cancelled subject to clause 6 of Drawdown below.
DRAWDOWN	1. Facility drawdown may be allowed in multiple tranches during the Availability Period; 2. Trident will agree to a Project Drawdown Schedule with the Participants which should be approved by the Lenders Technical Consultant ("LTA"); 3. Each disbursement request to the Lenders should be accompanied by certification of the Independent Auditor ("IA") of proportionate equity injection in specified account by the equity holders. To be applicable on the aggregate outstanding of both Facilities; 4. Further, LTA and IA will certify all drawdown requests based on achieved milestones for the Project and will maintain supporting documents (invoices, quotations, progress reports) provided by the Company during the Construction Period; 5. LTA will issue a monitoring report on monthly basis and any red flags/ material concerns highlighted in the report will have to be addressed before the next drawdown date unless a valid reason is provided; 6. Any sums undrawn under the Facility on the expiry of the Availability Period shall stand cancelled. However, for abundant clarity, any LCs established up to the expiry of availability period and already communicated to lenders shall continue to be retired and any committed outstanding payments/ accrued payables pertaining to the Project Cost, subject to verification by the LTA and IA, as applicable, will be available for drawdown.

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PRINCIPAL & MARKUP REPAYMENT	The principal payments will commence after the end of Grace Period and will be paid in Forty (40) consecutive quarterly installments as per schedule - the first such payment falling due not later than Twenty Seven (27) months from FED and subsequently every three (3) months thereafter. Markup payments will be made quarterly in arrears. Mark-up will be calculated on the basis of actual number of days elapsed in a year of 365 days on the outstanding balance of the Facility. The first such payment will fall due in three (03) months from FED and subsequently every three (03) months thereafter.
MARK-UP RATE	**Facility I:** Markup Rate: SBP Refinance Rate under the applicable Scheme prevailing at the time of first drawdown plus FI margin, currently as under: Total Markup Rate of 6% p.a.: 3% p.a. (SBP Rate) + plus 3% p.a. (FI Margin) Markup to be paid quarterly in arrears. **Note:** Commercial rate will be applicable for the period taken by SBP to provide Refinance Facility. It will also be applicable for the period that any overdues are outstanding from the respective installment dates. Commercial rate: Three (03) month KIBOR plus spread of 3% p.a. **Facility II:** Three (03) month KIBOR plus a spread of 3% p.a. KIBOR is defined as average rate; ask side for three (03) month Karachi Inter Bank Offered Rate ("KIBOR") as published on Reuters page or as published by the Financial Markets Association of Pakistan in case Reuters page is unavailable. KIBOR will be set one (01) working day (last applicable business day) before disbursement of each tranche, which will then be revised after three (03) months of disbursement. If at any time during the currency of this agreement, KIBOR is discontinued or ceases to be a realistic representation of the prevailing cost of funds in the money markets, in the opinion of the Lenders, the same would be replaced by a relevant rate of a similar nature or an alternate basis would be agreed upon for determining the base rate.
COLLECTION MECHANISM - **COLLECTION ACCOUNT** - **DEBT PAYMENT ACCOUNT** - **DEBT SERVICE RESERVE ACCOUNT**	Following accounts to be set up under lien of Security Agent on behalf of the Lenders: **Collection Account** ("CA"): All energy payments received from the Power Purchaser ("Central Power Purchasing Agency" or "CPPA") to be routed through this account. Security Agent will give irrevocable instructions to the bank to deposit one-third of the upcoming

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	instalment payment every month in the Debt Payment Account, after receiving the energy payments. **Debt Payment Account ("DPA"):** DPA to be funded through the CA as mentioned above. In the event that there is a shortfall in the account to meet the upcoming instalment payment, Company shall deposit remaining funds prior to three (03) working days before due date. **Debt Service Reserve Account ("DSRA"):** DSRA to be funded by the borrower within one month of achieving COD upto the extent of maximum installment payment (principal and markup) as per schedule. In the event of shortfall in DPA to meet the upcoming installment payment, funds may be utilized from DSRA upto the extent of the shortfall. The shortfall to be met from the next upcoming energy payment. Funds in the Collection Account to be utilized under the following waterfall mechanism: 1. Transfer to DPA as defined above 2. To meet the shortfall in the DSRA account (as discussed above) 3. Any fee / amounts outstanding under the Financing Agreements 4. Remaining funds to be released to the borrower
SECURITY	Facility security structure to be finalized after consultation with the legal counsel and to include but not limited to the following: ▪ Exclusive hypothecation charge over all present and future moveable fixed assets with a 25% margin over the Facility Amount (the "Hypothecation"); ▪ Exclusive mortgage charge over land and building, and any other immovable property of Trident with a 25% margin over the Facility amount (the "Mortgage"); ▪ Exclusive Assignment over receivables from Government of Pakistan / Power Purchaser and/or any of its successors, assignees and transferees, due under the Energy Purchase Agreement; ▪ Exclusive Assignment of the Security Trustee on all Project Insurances of the Borrower, Security Trustee to be designated as co-insured/beneficiary/co-loss payee status in all Project Insurances and cut-through agreements for reinsurance; ▪ Exclusive Assignment over the Borrower's rights and benefits under the key Project Documents and any amendments thereto; ▪ A lien and set-off right over all Project accounts including but not limited to the Collection Account, Debt Payment Account, and Debt Service Reserve Account; ▪ Pledge of shares up to 51% of the share capital to the Lenders; ▪ Corporate Guarantee of the Sponsor's company; ▪ Project Funds Agreement ("PFA") to be executed by the Sponsors guaranteeing to meet through injection of fresh equity and/or

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	subordinated loans throughout the tenor of the facility under the following events: - Any shortfall in Debt Payment Account; - Cost Overruns in the Project; ▪ Personal Guarantees of all Sponsors / Directors of the Company along with all net worth statements; Any other security that Lenders and/or Legal Counsel deems necessary to be incorporated in the transaction documents.
STEP-IN RIGHTS	In the event of default, Lenders will have step-in rights in the Company. Step-in rights to be defined in greater length in the transaction documents.
ACCOUNTS BANK	To be decided.
PROJECT MONITORING BANK	To be decided.
LEGAL COUNSEL	To be decided. All legal and other professional service expenses/charges for the Facility including but not limited to lawyer fees, security perfection costs etc. shall be borne by Borrower and will be payable at actual whether or not the transaction proceeds to signature.
LENDERS TECHNICAL ADVISOR	To be decided. The Lenders Technical Advisor ("LTA") will be responsible for monitoring the construction progress and general oversight of the project during the construction phase. It will also issue a certificate prior to all drawdowns and officially mark the commercial operations of the project. The professional fees of LTA and related expenses, to be laid down in the contract agreement, will be borne by the borrower.
INDEPENDENT AUDITOR	The Company will appoint, at its own costs, an Independent Auditor ("IA") for the benefit of Participants. Broad scope of work will include monitoring of construction progress, certifying incurred project costs and drawdown requests, certification of all commissioning tests and declaration of COD. Appointment of IA and TORs to be finalized after consultation and written approval from the Lead Advisors. The professional fees of IA and related expenses, to be laid down in the contract agreement, will be borne by the borrower.
INSURANCE ADVISOR	The Lenders shall require Trident to appoint, at its own cost, an independent Insurance Advisor for a period as determined by arrangers and advisors. The Insurance Advisor will advise the arrangers and advisors on issues including, but not limited to, the types and amounts of insurances required separately during the construction and operations phases. In addition, the Insurance Advisor will also advise on the insurers/re-insurers for the transaction.

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ACCOUNTS BANK	To be decided.
PROJECT MONITORING BANK	To be decided.
PREPAYMENT OPTION	Prepayment will be made with Thirty (30) days prior notice to the Lenders. Prepayment will be allowed only on a mark-up payment date and in integral multiples of PKR 25 million.
OTHER TERMS AND CONDITIONS	Company shall comply with all relevant terms and conditions mentioned in SBP Scheme issued on July 26, 2019 and any subsequent changes thereto; a. No change in shareholding of the Company without Lenders' approval; b. Borrower to comply with all possible positive & negative covenants that will be incorporated in Facility Documents; c. Sponsors will arrange working capital facility three (3) months prior to the Commercial Operation Date; d. Lenders shall have the right to sell down the financing extended to Trident to any other financial institution; e. Company shall arrange bank statements of DPA, DSRA and CA within three (03) days of month-end to the Security Agent; f. Dividends shall only be allowed in case of timely instalment payments to the lenders and with Security Agent's due consent; g. Company shall co-ordinate with LTA and arrange monthly progress reports during the construction period to the lenders; h. All additional borrowings during the tenor of the facility shall require no-objection certificate from the Security Agent; Any other terms and conditions that Lenders and/or Legal Counsel deems necessary to be incorporated in the transaction documents.
CONDITIONS PRECEDENT	Conditions Precedent to the drawdown to be mutually agreed upon in the Facility Documents and shall include, without limitation, the following: a. Execution and delivery of all documentation and security perfection required for the Facility in form and substance satisfactory to both Lenders and the Legal Counsel and receipt of a satisfactory legal opinion in this regard; b. Board resolution from the Borrower certified by a duly authorized officer granting corporate approval for the Facility; c. Borrower shall ensure that all consents, approvals (including regulatory approvals), registrations and authorizations, both government and corporate, that are required to be in place, are in place, and in full force and effect prior to drawdown;

TRIDENT POWER GR (PRIVATE) LIMITED

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	d. Compliance by the Company with Prudential Regulations or other local laws applicable; e. All relevant insurances are in full force and effect to the satisfaction of Lead Advisors & Arrangers; f. Receipt of all required internal credit and / or board approvals and regulatory approvals by the Syndicate members; g. Auditor's certificate evidencing injection of equity by the sponsors & plan for equity injection of balance amount of equity acceptable to the syndicate. h. Receipt of certificate from the LTA certifying that the disbursement request is consistent with the project plan; i. Receipt of a legal opinion from legal counsel, confirming inter alia the validity, enforceability and binding effect of the obligations of the Borrower under the Facility documents, in form and substance acceptable to the arrangers; and Any other condition that Lenders and/or Legal Counsel may deem necessary.
ADVISORY FEE	2% of the facility amount payable in the following manner: - 25% - Signing of the Indicative Term Sheet ("ITS") - 25% - Signing of Transaction Documents - 50% - At the time of first Disbursement Any fees payable during the course of the transaction, upon payment, shall be non-refundable.
COMMITMENT FEE	Commencing from the FED till the end of the Availability Period, 0.25% per annum, payable quarterly in arrears on the undrawn balance of the facility.
SECURITY TRUSTEE & AGENT	Pak Brunei Investment Company Limited
TRUSTEE & AGENCY FEE	PKR 2,000,000 payable to the agent at the time of signing of Facility documents and thereafter on every anniversary thereof.
PARTICIPATION FEES	0.5% of participation amount of each lender.
OUT OF POCKET EXPENSES	To be borne by the Borrower. Out-of-pocket expenses include, but are not limited to, travel, accommodation, utilities, printing, advertisements, etc. and shall be based on actual. Out-of-pocket expenses do not include fees payable for professional services of legal counsel, LTA, IA etc. or any other fees, charges, taxes, levies, duties, surcharges or expenses explicitly highlighted herein.
MATERIAL ADVERSE CHANGE	If, on or prior to the disbursement of the Facility (notwithstanding signing of any transaction documents), in reasonable judgment of Lead

TRIDENT POWER GR (PRIVATE) LIMITED
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	Advisors and Arrangers, any material adverse change in: a) Any business, financial conditions, operations, performance, properties, concessions, consents or prospects of the borrower or its Sponsors; or b) Any circumstance, change or condition (including the continuation of an existing condition) in the bank, sector, loan syndication, financial or capital markets generally, Occurs and impairs the Facility or economic feasibility for the Facility, Lead Advisors and Arrangers shall have the right to renegotiate the terms hereof, or else, withdraw the offer.
INDEMNIFICATION	Until signing of the Facility Documents, the Company hereby indemnifies and agrees to hold Lead Advisors & Arrangers harmless and its subsidiaries and affiliates and each of its officers, directors, employees, agents, advisors and representatives (each an "Indemnified Party") from and against any and all claims, damages, losses, liabilities, costs and expenses (hereinafter collectively referred to as "Claim"), joint and several, that may be made against, incurred by or awarded against any Indemnified Party, in each case arising out of or in connection with or relating to performance of the Indemnified Party under the Offer, except to the extent such claim(s) have resulted from such Indemnified Party's gross negligence or willful misconduct.
CLEAR MARKET PROVISION	From the date of acceptance of this offer until the closing date of the Facility, no other external borrowings or guaranteed facility by and/or involving the Borrower or their subsidiaries, associated or related companies shall be mandated, syndicated or privately placed which might, in the opinion of the arrangers and advisors, have the effect of prejudicing the successful completion of this transaction without the arrangers and advisors prior written consent.
TAXES	The Company shall make all payments under this Offer without any setoff or counterclaim and free and clear of, and without any deduction or withholding for or on account of, any taxes, duties, costs or expenses. In the event that the Lenders are required to pay withholding tax in respect of the Facility, the Facility Documents and or any security created by the Company to secure the Facility, the Company shall reimburse the whole amount of the tax so paid by the Lenders, within a period of seven (7) business days of receiving a demand from them in this respect. In the event, the Company is required by any applicable law, to deduct any tax from such payment on behalf of the Lenders, the Company shall provide to the Security Agent original copies of the tax challans, duly made out in the name of Lead Advisors & Arrangers as applicable, in respect of the tax so deducted within a period of fourteen (14) days from the date on which such deduction is made by the Company.

TRIDENT POWER GR (PRIVATE) LIMITED TRIDENT

GOVERNMENT EXCISE, LEVIES AND CHARGES	Borrower shall pay all excise, levies, stamp duties, other duties or surcharges payable in connection with the Facility and the Project.
PAYMENTS	Payments by the Company of all dues under the Offer will not be subject to counterclaim or setoff for, or be otherwise affected by, any claim or dispute relating to any matter whatsoever and all such payments shall be made in immediately available free and clear funds without deduction for or on account of any present or future taxes, charges, deductions or withholdings except the withholding of tax in the event it is required by applicable law.
VALIDITY	This terms and conditions mentioned herein are valid for acceptance up to seven (07) business days after delivery of the offer to your office, unless extended in writing by Lead Advisors & Arrangers.
GOVERNING LAW AND JURISDICTION	Facility and its documents will be governed by and construed in accordance with the laws of the Islamic Republic of Pakistan and will provide for submission by the Company to the exclusive jurisdiction of courts of Pakistan.

END OF SUMMARY OF INDICATIVE TERMS AND CONDITIONS

FOR & ON BEHALF OF PAK BRUNEI INVESTMENT COMPANY LIMITED

FOR & ON BEHALF OF AWWAL MODARABA

ACCEPTED FOR & ON BEHALF OF TRIDENT POWER GR (PRIVATE) LIMITED

YOUSUF MEHBOOB KHAN
CHIEF EXECUTIVE

TRIDENT POWER GR (PRIVATE) LIMITED

COMPANY STAMP

AUTHORISED SIGNATORY

DATE: March 20, 2020

TRIDENT POWER GR (PRIVATE) LIMITED

3.1. GENERAL

This chapter comprises of the analysis of available hydrological and meteorological data relevant for the estimation of flows available for power generation at RD 0+000 at Lower Chenab Canal (LCC). A brief account of Khanki Barrage with related irrigation network and construction of New Khanki Barrage is also discussed in order to provide comprehensive information to the reader.

The project area can easily be accessed through railway and road. The site is located about 17 Km south east of Wazirabad which is connected to the port of Karachi through a network of highways including the main G.T road. The approach to site from Wazirabad is through Wazirabad – Saroki / Alipur Chatha – Khanki road. The nearest major railway station to the site is Khanki Kacha on the Sialkot – Faisalabad line. Wazirabad is the nearest railway station on Karachi – Peshawar main railway line. Sialkot International Airport, about 50 Km north east of the site, is the nearest airport. However, the major international airport is the Allam Iqbal International Airport in Lahore, about 160 Km from the site, where many international airlines operate commercially.

3.2. KHANKI BARRAGE CANAL SYSTEM

Khanki Barrage was constructed in 1889-1892 and remodeled in 1935 with the design discharge capacity of 800,000 cusecs. It is the oldest headwork of Pakistan located at 32°24'09.65"N and 73°58'14.30"E. It controls water and flood flow in river Chenab and irrigates nearly 3.2 million acres of cultivated area in Central Punjab. The existing barrage being too old and outdated to continue the required services, construction of new barrage at 900 ft. downstream of the existing weir is in progress and shall be completed in 2017.Existing Khanki Barrage is shown in Figure 3.1. An overview of the Khanki Barrage is outlined as follows:

- It is the first weir in Punjab founded on alluvial sandy bed of river
- It is designed and constructed under conditions of extreme economy
- The weir got repeatedly damaged in portions and had to be remodeled extensively during 1919- 1920 and 1933- 1935

- The weir originally was a shuttered type weir comprising 8 spans of 500 ft. each, left undersluices (12 Nos. 20 ft. each) and canal head regulator (12 spans of 24.5 ft. each)
- With the extensive remodeling during 1933- 35, the weir now comprises (left to right):

Left Undersluice Bays	12 No. 20 ft. each
Three Weir Bays	1423 Ft with shutter gates
Central Undersluice Bays	18 No. 20 Ft Each
Three Weir Bays	1545.75 Ft with shutter gates
Right Undersluice	18 Nos. 20 ft. each
Total width between abutments	4386 feet
Waterway	3928.75 feet

Figure 3.1: Old Khanki Headworks

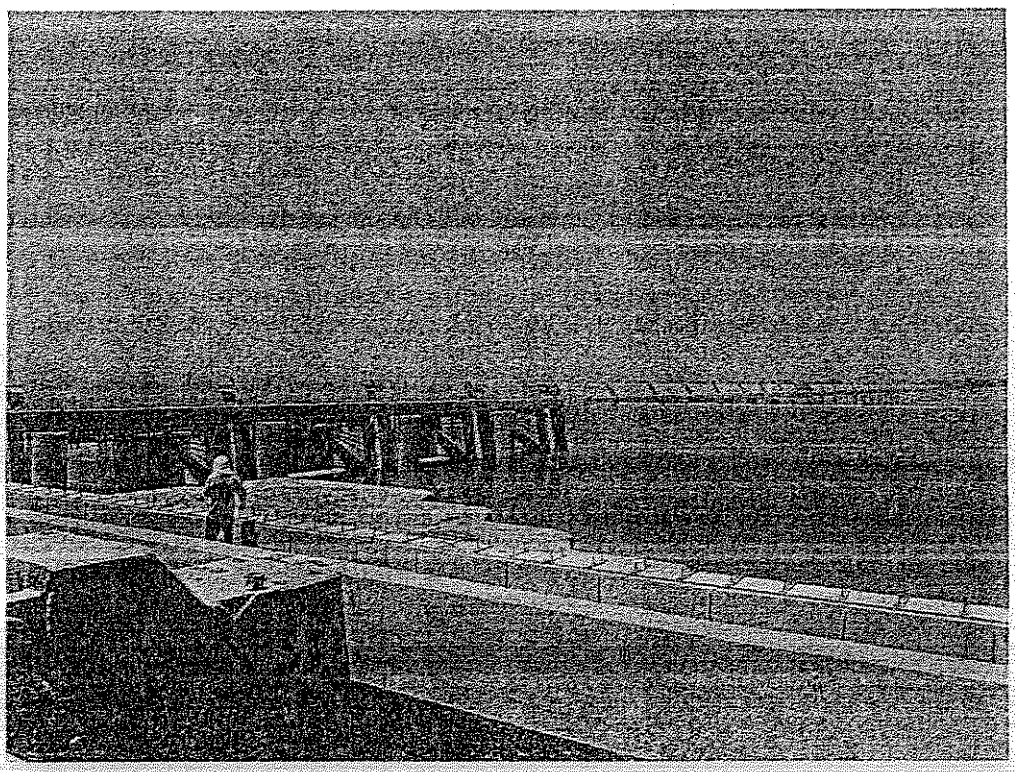
3.2.1.CONSTRUCTION OF NEW KHANKI BARRAGE

- A new modern barrage, 900 ft. downstream of existing weir and incorporating an AR Bridge
- New head regulator of L.C.C
- Re-aligned head reach of L.C.C originating from new head regulator and joining existing LCC at RD 5+000
- Improvement of roads on both banks of the river
- Utilities, buildings and other associated infrastructure works
- Rehabilitation of River Training works
- Provision of New Pumping Station for lift irrigation channel

3.2.2. SALIENT FEATURES OF NEW KHANKI BARRAGE PROJECT

Main weir	55 bays @ 60 ft. each
Undersluices	10 bays @ 60 ft. each
Silt excluder in first two bays of left undersluice	8 tunnels
LCC head regulator	6 bays @ 30 ft. each
Bridge on main barrage	4384 ft.
Bridge on head regulator	215 ft.
Radial gates for barrage	65 Nos. (60 ft wide each)
Radial gates for LCC head regulator	6 Nos. (30 ft wide each)
Two fish ladders (left and right)	215 ft.
Two divide walls (left and right)	342 ft.
Two guide banks (left and right)	1737 ft.

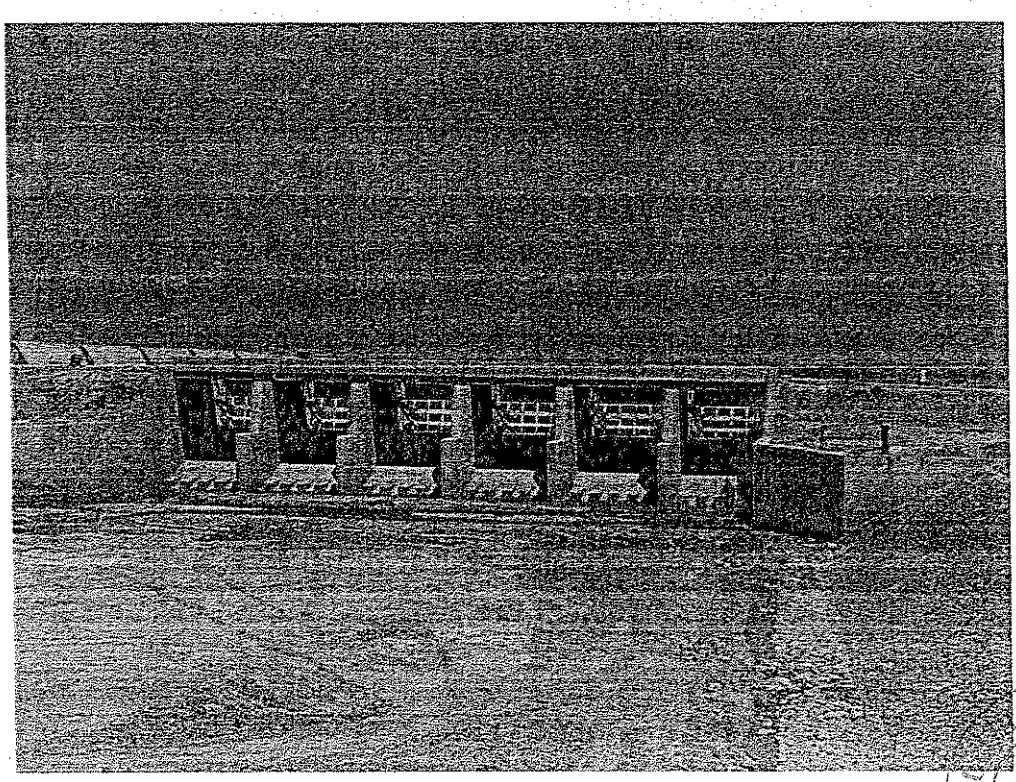
Figure 3.2: New Khanki Headworks



Accordingly, the construction of New Regulator of Lower Chenab Canal (LCC) at RD 0+000 is in process and 95% of the civil and electromechanical works have been completed. It is expected that New LCC Regulator shall be commissioned in October, 2016. Figure 3.3 and 3.4 shows old and new LCC regulators.

FIGURE 3.3: OLD LCC REGULATOR

FIGURE 3.4: NEW LCC REGULATOR



3.3. METEOROLOGICAL DATA AND ANALYSIS

3.3.1. DATA COLLECTION

Meteorological data (Temperature, Rainfall, Humidity and Wind Speed) for Sialkot meteorological station being the closest was analyzed for the period of last ten years (2006-2015).

3.3.2. DATA ANALYSIS

The country has four distinct climate seasons. April, May and June are extremely hot and dry months. July, August and September are hot and humid with intensive heat and scattered rainfall. The cool and dry period starts at the beginning of October and continues through November. December, January and February are the coldest months of the year. Due to the diversity of the climate, a large variety of crops is grown to support the agricultural economy. The same is experienced at the project site and shall not affect the construction schedule of the project. However, Moonsoon season in July and August affects the area whereas March and April being the spring season are very pleasant months.

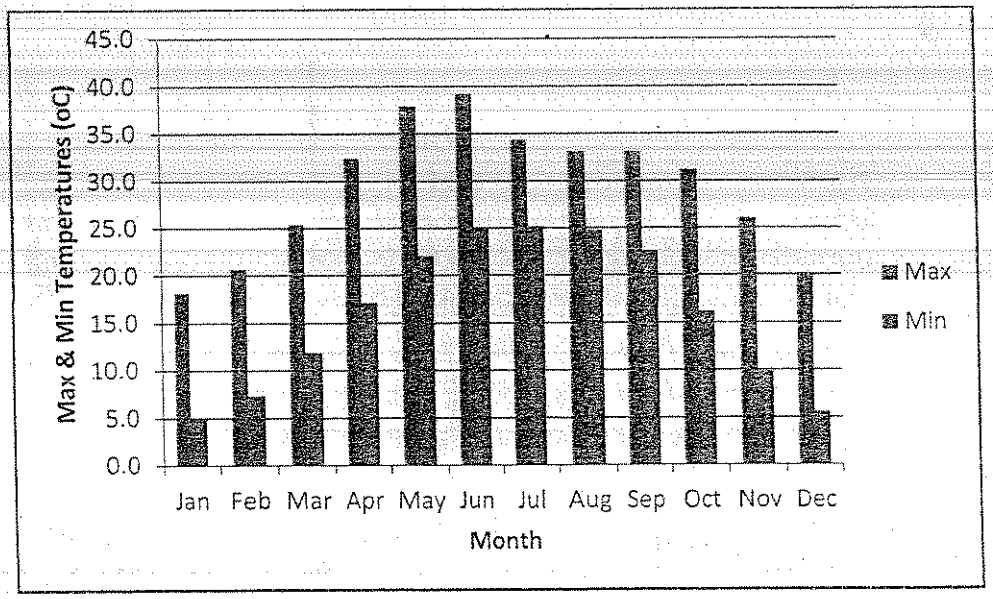
3.3.3. TEMPERATURE

The mean daily temperature ranges from (June being the hottest month) 30°C to 32°C in the summer season (May to July) and 11°C to 13°C in winter season (January and December). Mean monthly temperature in June rises to a highest value of 32.1°C and falls to the lowest value of 11.6°C in January. June and July are the hottest months in summer season. December and January are the coldest months in winter season. The monthly averages of minimum, maximum and mean daily temperatures are given in Table 3.1 and shown graphically in Figure 3.5 which shows the mean monthly maximum and mean monthly minimum temperature at Sialkot.

Table 3.1: Mean Monthly Temperature at Sialkot

Month	Daily Temperature (°C)		
	Min	Max	Mean
Jan	18.2	5.1	11.7
Feb	20.7	7.4	14.1
Mar	25.4	11.9	18.7
Apr	32.4	17.2	24.8
May	37.9	22.1	30.0
Jun	39.2	25.0	32.1
Jul	34.4	25.2	29.8
Aug	33.2	24.8	29.0
Sep	33.2	22.6	27.9
Oct	31.2	16.2	23.7
Nov	26.1	9.9	18.0
Dec	20.2	5.6	12.9

Figure 3.5: Mean Monthly Maximum & minimum Temperature at Sialkot



3.3.4. RAINFALL

In Pakistan the mean annual rainfall ranges from 4 to 30 inches in the lower Indus region to the northern foot hills. Only a small proportion of this annual rainfall makes any direct or useful contribution to irrigation water supplies. According to World Bank Consultants' report, the figure ranges from 1 to 17 inches. The rest is either converted to Direct Runoff or becomes a part of the ground water while a small proportion is lost by evaporation. According to estimation the present direct contribution to the crops is

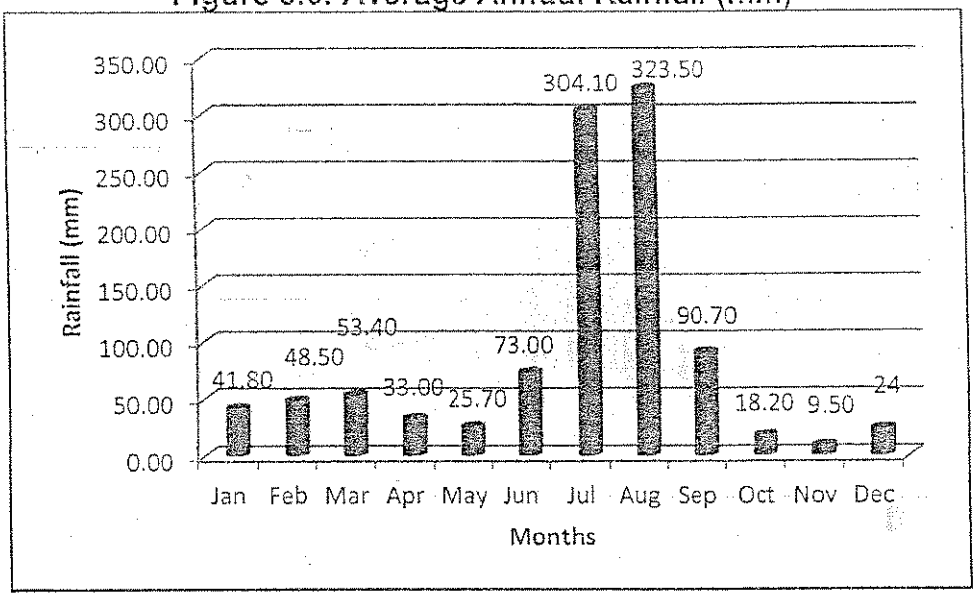
9 MAF / Annual. Daily rainfall data for Sialkot was collected and processed for monthly and annual rainfall basis.

Mean monthly rainfall and the number of rainy days for Sialkot are given in Table 3.2. The mean annual rainfall of the area is about 1045 mm (41 inches). The maximum rainfall occurs during the months of July, August and September, which is about 70% of the annual rainfall. Precipitation in the project area is characterized by the monsoon season. Most of the rainfall occurs during the monsoon season (May to October). Winter rains generally occur during the months of January, February and March. Table 3.2 shows that April, May, October and November are normally the months of least precipitation.

Table-3.2: Average Monthly Rainfall in Sialkot (mm)

Month	Mean Monthly Rainfall (mm)	Rainy Days (No.)
Jan	41.80	5
Feb	48.50	5.7
Mar	53.40	7.3
Apr	33.00	6.1
May	25.70	5.8
Jun	73.00	7.7
Jul	304.10	15.1
Aug	323.50	14.2
Sep	90.70	6.8
Oct	18.20	2.2
Nov	9.50	1.6
Dec	24	3.3
Annual	**1045.4**	**80.8**

Figure 3.6: Average Annual Rainfall (mm)



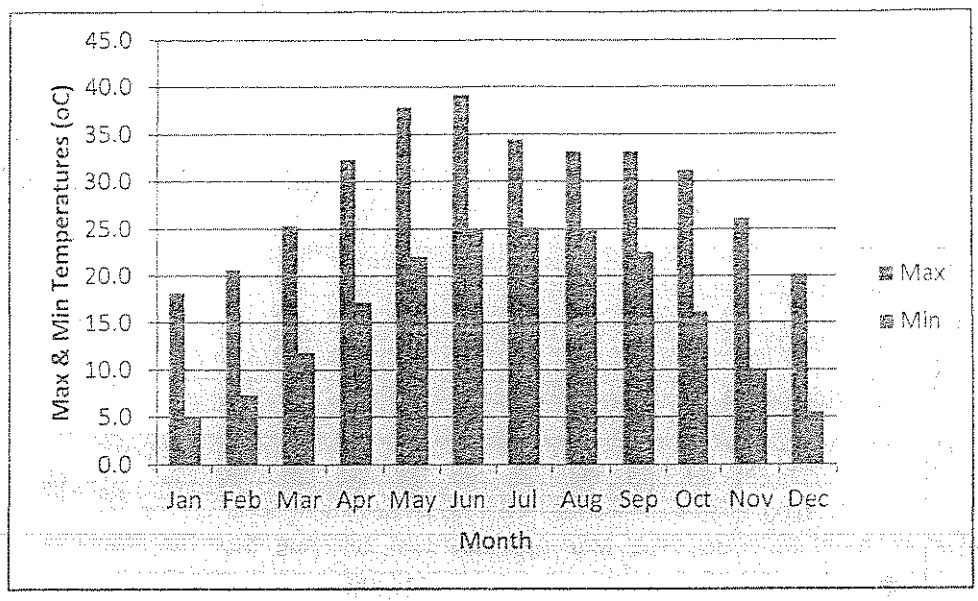
3.3.5. WIND SPEED

The mean wind speed at synoptic hours in knots is given in Table 3.3. and graphically presented in Figure 3.7. The data reveals that at 00:00 hours, the wind speeds are generally lower while higher wind speed are recorded at 03:00 and 12:00 hours. During summers wind speeds are generally higher than the wind speeds in winters.

Table-3.3: Mean Monthly Wind Speed in Sialkot

Month	Mean Monthly Wind Speed (Knots)		
	00:00	03:00	12:00
Jan	0.4	0.3	0.8
Feb	0.8	0.6	1.8
Mar	0.9	0.9	2
Apr	1	1	1.9
May	0.9	1.4	2
Jun	1.1	1.7	2
Jul	1.4	1.2	1.5
Aug	1.1	0.7	1.1
Sep	0.6	0.7	1.3
Oct	0.4	0.3	0.4
Nov	0.1	0.2	0.2
Dec	0.3	0.2	0.3

Figure 3.7: Mean Monthly Maximum & Minimum Wind Speed at Sialkot



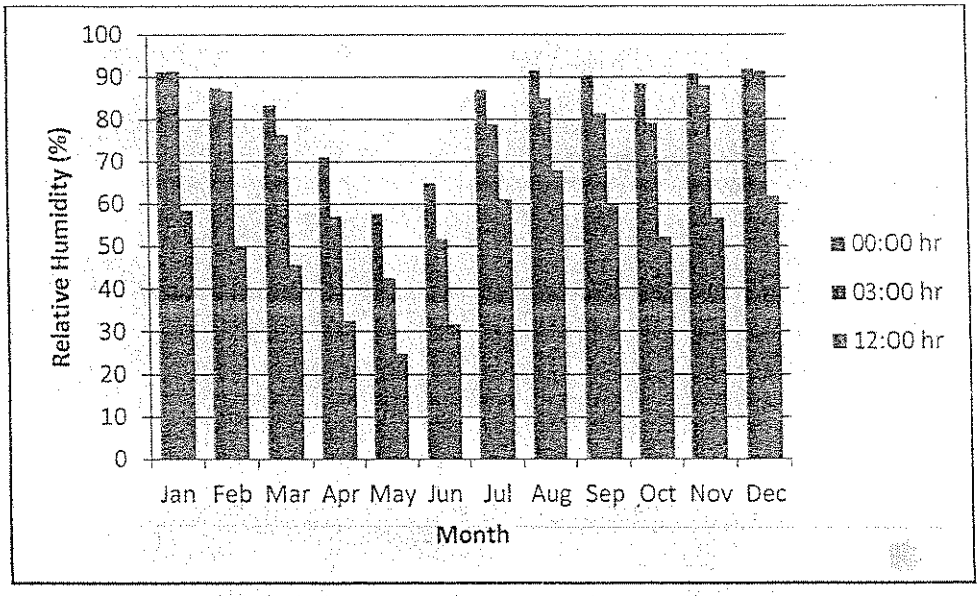
3.3.6. RELATIVE HUMIDITY

The relative humidity data at 00:00, 03:00 and 12:00 hours are available. Mean monthly relative humidity is given in Table 3.4. At 00:00 hr the relative humidity varies from lowest value of 58% in May to highest value of 92% in December. At 12:00 hr the lowest value is 24.9 % in May to highest value of 68 % in August.

Table-3.4: Mean Monthly Humidity

Month	Relative Humidity (%)		
	00:00	03:00	12:00
Jan	91.3	91.5	58.6
Feb	87.5	86.8	49.9
Mar	83.5	76.5	45.8
Apr	71.2	57.2	32.6
May	57.7	42.7	24.9
Jun	65	51.8	31.7
Jul	87.1	79	61.3
Aug	91.7	85.2	68.1
Sep	90.4	81.5	60.1
Oct	88.5	79.3	52.3
Nov	90.9	88.1	56.9
Dec	92	91.5	61.9

Figure 3.8: Relative Humidity (%)



3.7. HYDROLOGY

3.7.1. DISCHARGE DATA COLLECTION

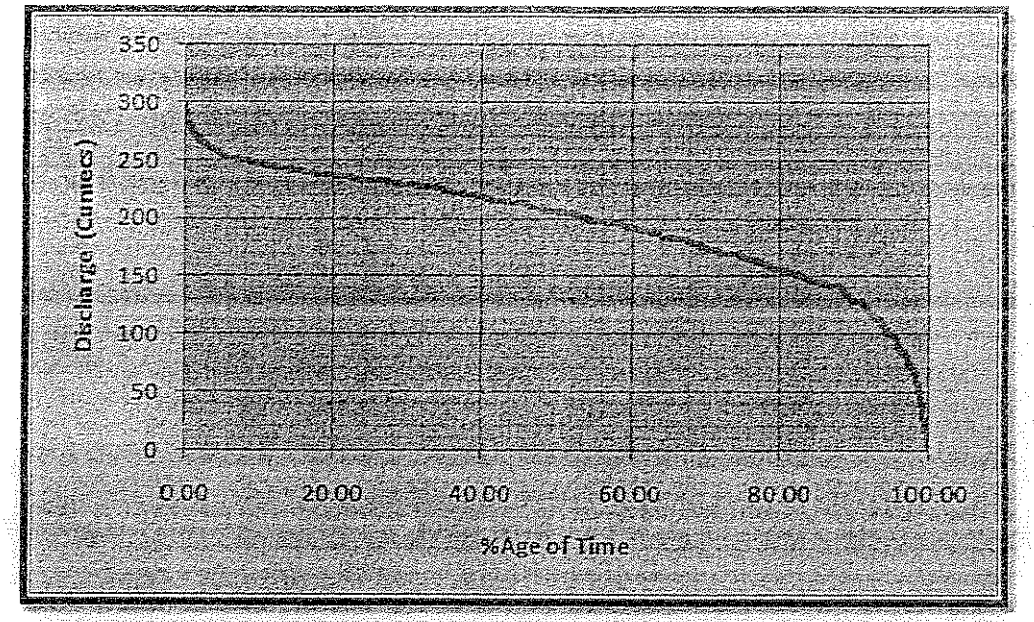
The average daily discharge data of Lower Chenab Canal at RD0+000 was collected from the office of Executive Engineer, Khanki Barrage, for the duration of 1991-2015 and provided as Annexure-3A in detailed updated feasibility study and accordingly the flow data analysis has been carried out.

3.7.2. FLOW DATA ANALYSIS

3.7.2.1. FLOW DURATION CURVE

Flow duration curve has been developed using average daily discharge data for a period of 1991-2015 in order to estimate the availability of water for power generation. Flow Duration curve is provided as Figure 3.9 and it is noticeable that canal runs 50% of the time with discharge exceeding 210 m^3/s (7410 cusecs) and available with discharge 250 m^3/s (8825 cusecs) for about 8% of the time.

Figure 3.9: Flow Duration Curve

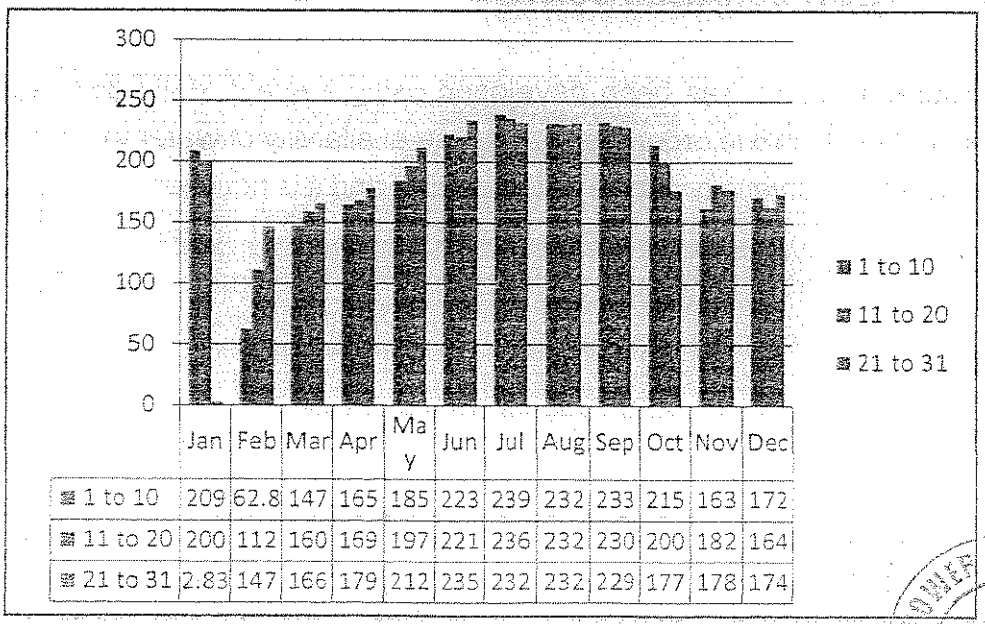


3.7.2.2. AVAILABILITY OF FLOWS FOR POWER GENERATIONS

Average 10-Daily discharge data and the maximum monthly discharge data is processed on the basis of daily discharge data for the last twenty five years. The average 10-Daily discharge is graphically presented as Figure-3.10.

Average, maximum and minimum monthly discharge is presented as Figure-3.11. Similarly, mean monthly discharge is shown in Figure-3.12. It is evident that June, July, August and September are the months of high flows.

Figure 3.10: 10-Daily Discharge



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1 to 10	209	62.8	147	165	185	223	239	232	233	215	163	172
11 to 20	200	112	160	169	197	221	236	232	230	200	182	164
21 to 31	2.83	147	166	179	212	235	232	232	229	177	178	174

Figure 3.11: Average, Maximum & Minimum Discharge

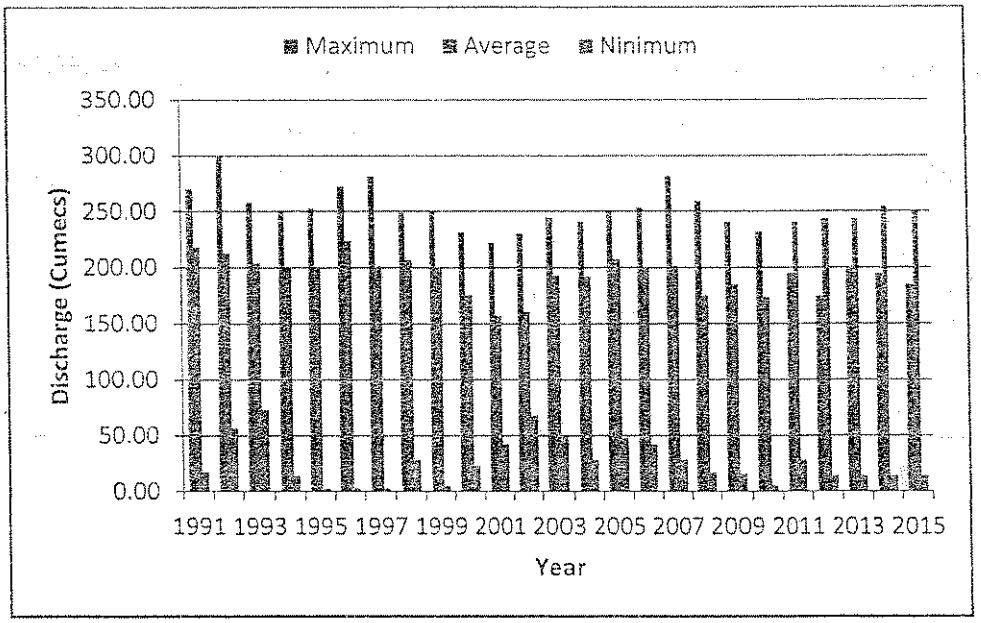
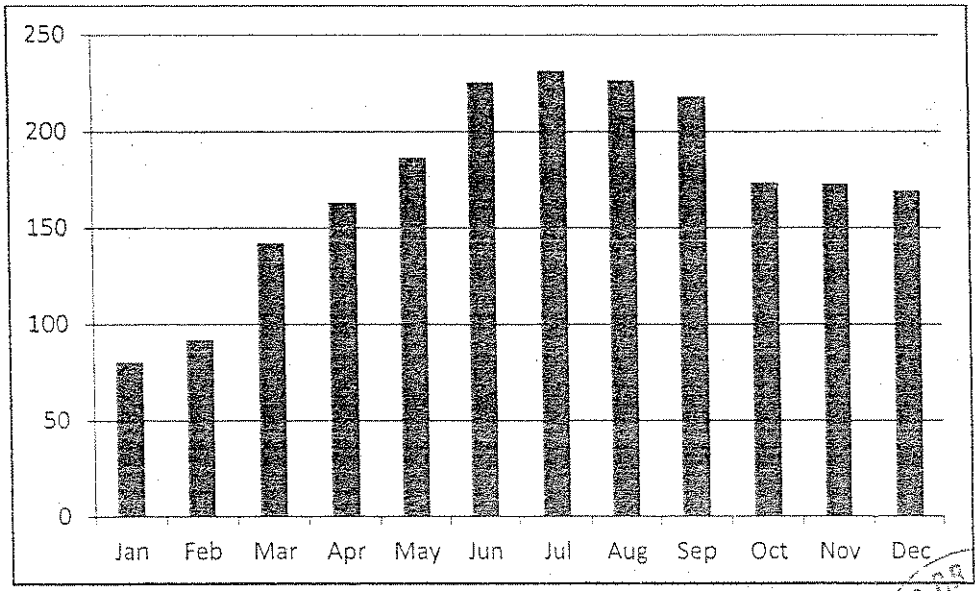


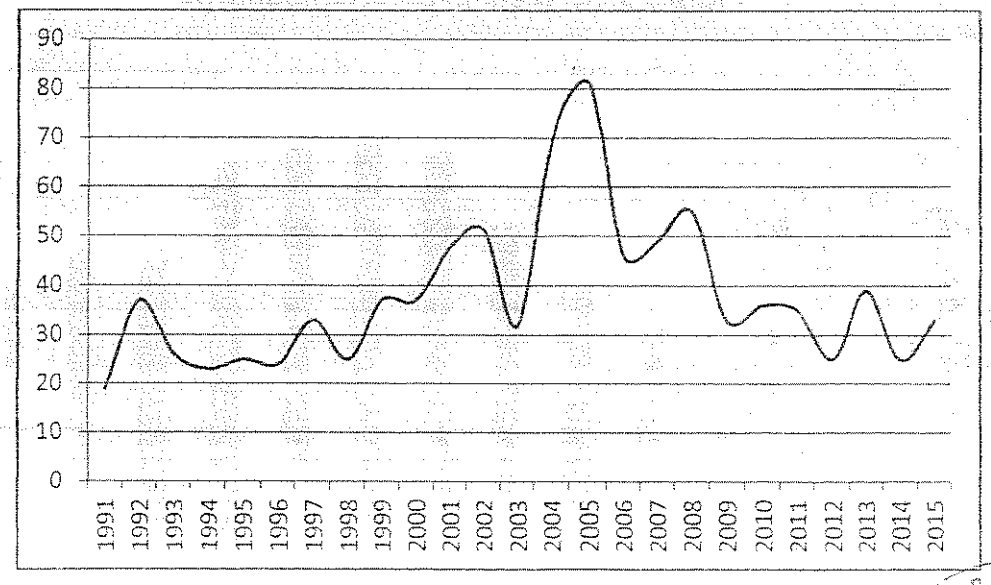
Figure 3.12: Mean Monthly Discharge



3.7.3. CLOSURE PERIODS OF LOWER CHENAB CANAL

Mostly the canal remains closed for maintenance purposes for about 30 to 45 days in the months of December and January. The canal closure usually starts from the last week of December till the end of January; however, from 2005 to 2008 abnormal colures of 10 to 15 days is observed. The detail of canal closure for the periods of 1991-2015 is presented in Figure-3.13, which indicates that the canal closure normally ranges from 30-45 days. It is also mentioned that canal remained closed in months other than January and December. The average closure period is 39 days.

Figure-3.13: Annual Closure Period at Lower Chenab Canal



3.8. RATING CURVE FOR LCC

A stage-discharge relationship has been derived by a non-linear least-squares fit through the pairs of available stage-discharge data originating from Punjab Irrigation Department discharge measurement protocols at Khanki Headworks. The resulting relationship was expressed as a power formula commonly used for stage discharge rating curves

$Q = A_o (H - H_o) A_1$

where

Q = computed discharge in m^3/s

H = gauge height reading in m

H_o = stage at zero discharge

A_o and A_1 are constants.

The fitted power formula valid for 1.5 -9ft of gauge heights was expressed as:

$$Q = -4E\text{-}08x^2 + 0.0014x - 0.2708$$

The obtained stage discharge relationship together with the scatter diagram of measured Q– H pairs is displayed in Figure 3.14.

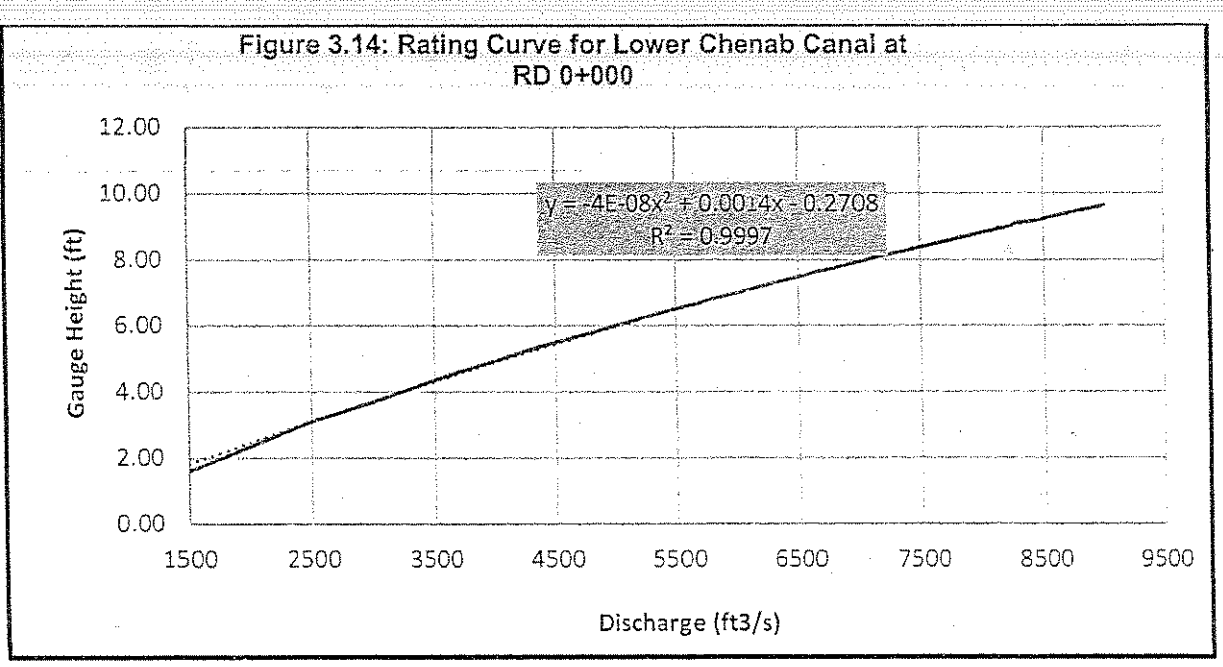


Figure 3.14: Rating Curve for Lower Chenab Canal at RD 0+000

Table 3.5: Stage–Discharge Relationship LCC valid for the year 2014

2014 LCC GAUEGES																								
DATE	JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEP	OCT		NOV		DEC	
1	8100	8.89	0		6000	6.9	6000	7.01	6300	7.29	7700	8.55	8250	9.02	8250	9.02		8450	9.19	6700	7.66	6200	7.2
2	8100	8.89	0		6001	6	6000	7	6300	7.29	7600	8.46	8100	8.89	8600	9.31		8450	9.19	6700	7.66	6200	7.2
3	8100	8.89	0		6002	6	5500	6.52	6500	7.48	7600	8.46	8200	8.97	8600	9.31		8400	9.15	6800	7.75	6200	7.2
4	8100	8.89	0		6003	6	5500	6.52	6500	7.48	7750	8.59	8200	8.97	8600	9.31		8300	9.06	6850	7.8	6200	7.2
5	8100	8.89	0		6004	6.1	5350	6.37	6350	7.34	8000	8.81	8300	9.06	8600	9.31		7700	8.55	6850	7.8	5480	6.5
6	8100	8.89	0		6005	5.9	5300	6.32	6400	7.38	8000	8.81	8400	9.05	8700	9.4		7700	8.55	6750	7.71	6250	7.24
7	8100	8.89	500		6006	7.01	5600	6.62	6450	7.43	8000	8.81	8400	9.15	8700	9.4		7700	8.55	6750	7.71	6250	7.24
8	8100	8.97	1500	1.6	6007	5.9	5600	6.62	6600	7.57	8000	8.81	8400	9.15	8800	9.48		7700	8.55	6700	7.66	6250	7.24
9	8100	8.97	2500	3.1	6008	5.8	5600	6.62	6850	7.8	8000	8.81	8450	9.18	8600	9.31		7950	8.76	6700	7.66	6100	7.1
10	8100	8.97	2500	3.1	6009	5.7	5600	6.62	5350	6.37	8050	8.85	8450	9.18	8600	9.31		8000	8.81	6700	7.66	5994	7.1
11	8100	8.97	3000	3.25	6010	7.01	5800	6.82	5350	6.37	8100	8.89	8500	9.23	8600	9.31		8000	8.81	6700	7.66	6100	7.1
12	8100	8.97	3000	3.25	5700	6.72	6000	7	5850	6.86	8150	8.94	8550	9.27	8800	9.48		8050	8.85	6800	7.75	5994	7.04
13	8100	8.97	3500	4.36	5500	6.52	6100	7.1	5850	6.86	8150	8.94	8550	9.27	8800	9.48		8050	8.85	6700	7.66	6100	7.1
14	8100	8.97	3700	4.6	5200	6.22	6100	7.1	5350	6.37	8150	8.94	8550	9.27	8800	9.48		8050	8.85	6600	7.57	6151	7.15
15	8100	8.97	4400	4.94	5200	6.22	6100	7.1	5350	6.37	8150	8.94	8550	9.27	8800	9.48		8000	8.81	6400	7.38	5994	7
16	8100	8.97	4400	5.2	5200	6.22	6100	7.1	5350	6.37	8150	8.94	8550	9.15	8900	9.56		7800	8.64	6400	7.38	6100	7.1
17	8100	8.97	5000	6.02	5200	6.22	6100	7.1	5400	6.42	8150	8.94	8400	9.15	8900	9.56		7400	8.3	6400	7.38	5330	6.35
18	8100	8.97	5500	5.3	5200	6.22	5900	6.91	5900	6.91	8150	8.94	8400	9.15	8800	9.48		7600	8.46	6400	738	5380	6.4
19	8100	8.97	6000	5.8	5200	6.22	5400	6.42	6200	7.2	8150	8.94	8400	9.27	8700	9.41		7600	8.46	6300	7.29	5330	6.35
20	8100	8.97	6000	6.02	5500	6.52	5200	6.22	6400	7.38	8150	8.94	8550	9.27	8700	9.41		7600	8.48	6300	7.29	5330	6.35
21	8100	8.97	6000	6.02	5800	6.82	5200	6.22	6650	7.62	8150	8.94	8550	9.27	8700	9.41		6600	7.56	6200	7.29	5330	6.35
22	8100	8.97	6000	6.12	5800	6.82	5600	6.62	7000	7.93	8250	9.02	8550	9.27	8800	9.48		6700	7.66	6200	7.2	5330	6.35
23	8100	8.97	6000	6.22	5800	6.82	5600	6.62	7000	7.93	8200	8.97	8600	9.31	8900	9.56		6750	7.7	6200	7.2	5330	6.35
24	8100	8.97	6000	6.5	5800	6.82	5600	6.62	7000	7.93	8200	8.97	8600	9.31	8700	9.41		6750	7.66	6100	7.2	5330	6.35
25	8100	8.97	6000	7.3	5800	6.82	5650	6.62	7000	7.93	8200	8.97	8600	9.31	8800	9.48		6700	7.66	6300	7.29	4889	5.9
26	8100	8.97	6000	6.4	5400	5.89	5850	6.67	7000	7.98	8200	8.97	8600	9.31	9000	9.64		6700	7.66	6300	7.29	4143	5.1
27	8100	8.97	6000	6.5	5400	5.42	5850	6.86	7050	8.07	8200	8.85	8600	8.89	9000	9.64		6700	7.66	6300	7.29	6650	7.62
28	8100	8.97	6000	5.2	5600	6.42	5950	6.86	7150	8.29	8250	9.02	8600	8.89	9000	9.64		6700	7.66	6200	7.29	6650	7.62
29	8100	8.97			5600	6.62	6050	6.9	7400	8.29	8250	9.02	8100	8.89	9000	9.64		6700	7.66	6200	7.2	7450	8.33
30	8100	8.97			5900	6.91	6300	7.06	7400	8.45	8250	9.02	8100		5683	6.7		6700	7.66	6700	7.2	7700	8.44
31	8100	8.97			5900	6.91		7.29	7600				8100		9000	9.64		6700	7.66			7800	8.64

Based on the above rating table of LCC at RD 0+000, all historic gauge heights and corresponding discharge values were plotted on the rating curve. There is no noticeable scatter of points which was expected to occur all along the curve due to observational errors/or practical problems associated with discharge regulation which are done manually.

3.9. CONCLUSIONS

The following is concluded on the basis of above discussions:

- The upstream level should be kept constant at designed full supply level.
- The average closure period during the last ten years is 39 days including the abnormal closure in March, April or October for warabandi. Therefore to get more benefits of energy it is proposed that closure period be kept in December and January only for annual maintenance.

- Design Discharge for the power plant is considered as 250 Cumecs after discharge optimization and the details are furnished in Power & Energy (Chapter 9).

TRIDENT POWER GR (Pvt.) Ltd.

LCC Hydropower Project

Project Cost Estimate

Item No	Description	Amount Rs	Total in Million Rs	USD Million
1	EPC COST			
1.1	Civil Works	1,440,467,843	1,440	8.47
1.2	Hydromechanical & Electromechanical Works	1,835,109,048	1,835	10.79
2	LAND COST (Privately Owned)	27,000,000	27	0.16
3	Development Costs	190,000,000	190	1.12
4	Insurance	38,000,000	38	0.22
5	Lender's Fee & Charges	114,000,000	114	0.67
6	Interest During Construction (IDC)	228,000,000	228	1.34
	Total in Million Rs	**3,872,576,891**	**3,872.58**	**22.78**
			1 USD	PKR 170

TRIDENT POWER GR (PRIVATE) LIMITED
TRIDENT

COST ESTIMATE OF CIVIL WORKS
LCC HYDROPOWER PROJECT

Sr. #	Description of Work		Unit	Quantity	Amount (Rs.)
1	Excavation & Dressing		Cft	12,092,340.00	166,953,100
2	Canal Lining		Cft	1,375,888.00	210,074,600
3	Dewatering		LS	1.00	28,098,000
4	Road Works		Cft	111,350.00	19,597,600
5	Power House & Spillway		LS	1.00	365,912,123
6	Concrete		Cft	341,682.50	273,207,420
7	Reinforcement		Ton	1,005.00	125,625,000
8	Miscellaneous		LS	1.00	251,000,000
	Sub Total				1,440,467,843
	Total of Civil Works				1,440,467,843

1. Earthworks

Sr. #	Description of Work	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1	Excavation in Temporary Diversion Canal	Cft	6,875,000	13.00	89,375,000
2	Excavation in Access Road	Cft	89,080	14.00	1,247,120
3	Excavation in Power House (30m lead)	Cft	252,000	25.00	6,300,000
4	Excavation in Power House (150m lead)	Cft	108,000	28.00	3,024,000
5	Headrace Canal Filling	Cft	4,500,000	14.00	63,000,000
6	Excavation for Spillway	Cft	56,250	25.00	1,406,250
7	Dressing of subgrade on bed	Sft	155,400	12.00	1,864,800
8	Dressing of subgrade on slope	Sft	56,610	13.00	735,930
	Sub Total- 1		12,092,340		166,953,100

2. Canal Lining

Sr. #	Description of Work	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1	Stone Pitching u/s of Powerhouse	Cft	375,000	155.00	58,125,000
2	Stone Pitching on Embankments	Cft	72,000	350.00	25,200,000
3	Stone Pitching d/s powerhouse	Cft	300,000	350.00	105,000,000
4	Temporary Canal Prisom Works	Cft	625,000	32.00	20,000,000
5	Brick Masonry	Cft	3,888	450.00	1,749,600
	Sub Total- 2		1,375,888		210,074,600

3. Dewatering

Sr. #	Description of Work	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1	Dewatering	LS	1	28,098,000.00	28,098,000
	Sub Total- 3				28,098,000

TRIDENT POWER GB (PRIVATE) LIMITED
TRIDENT

4. Road Works

Sr. #	Description of Work	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1	Sub Base Course	Cft	44,540	75.00	3,340,500
2	Base Course	Cft	44,540	90.00	4,008,600
3	Asphaltic Wearing Course	Cft	22,270	550.00	12,248,500
	Sub Total- 4		111,350		19,597,600

5. Power House

Sr. #	Description of Work	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1	Power House & Spillway (Building accessories, flooring, etc)	LS	1	365,912,123	365,912,123
	Sub Total- 5				365,912,123

6. Concrete

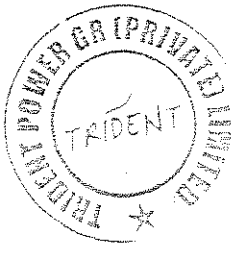
Sr. #	Description of Work	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1	Lean Concrete	Cft	7,500	450.00	3,375,000
2	Structural Concrete - Power House	Cft	173,256	1,050.00	181,918,800
3	Structual Concrete - Spillway	Cft	58,438	1,050.00	61,359,375
4	Concrete - Other	Cft	11,200	700.00	7,840,000
5	Plaster layer on bed	Sft	75,946	205.00	15,568,930
6	Plaster layer on slope	Sft	15,343	205.00	3,145,315
	Sub Total- 6		341,683		273,207,420

7. Reinforcement

Sr. #	Description of Work	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1	Steel Reinforcement - Powerhouse & Spillway	Ton	987	125,000	123,375,000
	Steel Reinforcement - Other	Ton	18	125,000	2,250,000
	Sub Total- 7		1,005		125,625,000

8. Miscellaneous

Sr. #	Description of Work	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1	Bridge	LS	1	8,000,000.00	8,000,000
2	Gates	LS	1	213,000,000.00	213,000,000
3	O&M Staff Colony	LS	1	30,000,000.00	30,000,000
	Sub Total- 4				251,000,000



LCC HYDROPOWER PROJECT

COST ESTIMATE OF ELECTROMECHANICAL WORKS

BILL OF QUANTITIES FOR MECHANICAL, HYDRAULIC STEEL STRUCTURE AND ELECTRICAL WORKS

Sr.No	Description	Unit	Qty	Rate Per Unit (Foreign Currency) US Dollar	Rate Per Unit (Local Currency) Pak. Rs.	Total Cost (Local Currency) (Pak. Rs.)
1	MECHANICAL EQUIPMENT					
	Engineering Design, Manufacture, Deliver to Site, Store, Install, Test, Commission and maintain for One year each item of the following equipment					
1.1	Pit type kaplan Double regulated horizontal shaft turbines, 1900 **KW**, complete with flow meters, pressure gauges, draft tubes, steel liners, foundation steel frames, anchores etc.	Set	4	1,253,300.00	213,061,000.00	852,244,000
1.2	cooling water system including pumps, piping, valves strainers etc.	Set	4	32,000.00	5,440,000.00	21,760,000
1.3	Drainage and Dewatering pump, complete with electric motor of about 3 HP, suction and delivery pipes	No.	4	22,000.00	3,740,000.00	14,960,000
1.4	Digital Governors complete with PID characteristics,based on PLC instrumentation and indications, power and control cables, hydraulic power packs,Auto frequency and speed control, Automatic local control,Manual and auto mode,Speed adjustable (0-10%),Black start operation,Hydraulic oil (charged plus spare)	Set	4	70,000.00	11,900,000.00	47,600,000
	Powerhouse (20 Tonne) pendant operated bridge crane complete with runway conductors, power cable, chain pulley blocks, slings, rails, embedded anchors, sole pales etc.	No	1	68,000.00	11,560,000.00	11,560,000

LCC HYDROPOWER PROJECT

COST ESTIMATE OF ELECTROMECHANICAL WORKS

BILL OF QUANTITIES FOR MECHANICAL, HYDRAULIC STEEL STRUCTURE AND ELECTRICAL WORKS

Sr.No	Description	Unit	Qty	Rate Per Unit (Foreign Currency) US Dollar	Rate Per Unit (Local Currency) Pak. Rs.	Total Cost (Local Currency) (Pak. Rs.)
1.6	Parallel shaft speed increaser(gears) with speed ratio of 85.7/750	No	4	60,000.00	10,200,000.00	40,800,000
1.7	Water Level Measuring Devices	Nos	4	5,000.00	850,000.00	3,400,000
1.8	Control and instrumentation	Lot	4	32,000.00	5,440,000.00	21,760,000
1.9	Fire extinguisher (dry powder type) of capacity 8 kg	No.	8		87,200.00	697,600
1.1	Painting of all Hydraulic and Mechanical structures	Lumpsum				
1.11	Spare parts for turbines, digital governors, mechnaical auxilliaries, generators, synchronizer, control panels etc. for five (5) years operation (provide a seprate detail and breakdown prices of spares)	Lot	1	126,000.00	21,420,000.00	21,420,000
1.12	Items necessary for the operation of the Turbine-generating units and maintenance tools (give details)	Set	1	25,000.00	4,250,000	4,250,000
2	HYDRAULIC STEEL STRUCTURE					
2.1	At power intake structure 8.96m wide and 9.7 m high stoplog (4 sections) including embeded parts, rails etc	No	1		16,800,000	16,800,000
2.2	Removable trashrack along with rail for power intake 9.0m width and 12.0m height complete with 1st and 2nd stage embedded parts	No	2		3,900,000	7,800,000
2.3	Trashrack Cleaner (Inclined, Hoist boom, max. rotation 330°, Rake "payload" 2 tonnes, Grab net capacity 4 tonnes along with trolley, Payload minimum 3 tonnes	No	1		12,000,000	12,000,000

LCC HYDROPOWER PROJECT

COST ESTIMATE OF ELECTROMECHANICAL WORKS

BILL OF QUANTITIES FOR MECHANICAL, HYDRAULIC STEEL STRUCTURE AND ELECTRICAL WORKS

Sr.No	Description	Unit	Qty	Rate Per Unit (Foreign Currency) US Dollar	Rate Per Unit (Local Currency) Pak. Rs.	Total Cost (Local Currency) (Pak. Rs.)
2.4	Mobile Crane 2 tonne for handling Stoplog , at inlet and outlet and Trashrack **(optional)**	No	1		18,000,000	18,000,000
2.5	Draft Tube outlet stoplogs (width 8.96 m x Height 6.4m complete with embeded parts	No	4		15,500,000	62,000,000
2.6	Two monorail hoists 3 ton capacity for handling of intake stoplogs, trashrack, outlet stoplog	No	2		5,200,000	10,400,000
	Total Mechanical (A)					**1,167,451,600**
3	**ELECTRICAL EQUIPMENT**					
3.1	**GENERATORS**					
3.1.2	Generators rated 1.97 MVA,P.f.0.85, along with generator control panel,static excitation and AVR panel,Field switch cubicle	No	4	650,000.00	110,500,000.00	442,000,000
3.1.3	Generator Circuit Breaker Cubicle	No	4	24,300.00	4,131,000	16,524,000
3.1.4	Generator Earthing Cubicle	No	4		4,190,000	16,760,000
3.1.5	Measuring/signalling devices	Lot	1		2,000,000	2,000,000
3.2	**TRANSFORMERS**					-
3.2.1	Step up transformer	No	4		6,100,000	24,400,000
3.2.2	Auxilliary transformer 100 kVA,11kV/0.4 kV for station services	No	3		3,900,000	11,700,000

LCC HYDROPOWER PROJECT

COST ESTIMATE OF ELECTROMECHANICAL WORKS

BILL OF QUANTITIES FOR MECHANICAL, HYDRAULIC STEEL STRUCTURE AND ELECTRICAL WORKS

Sr.No	Description	Unit	Qty	Rate Per Unit (Foreign Currency) US Dollar	Rate Per Unit (Local Currency) Pak. Rs.	Total Cost (Local Currency) (Pak. Rs.)
3.2.3	Distribution transformer of size 100 kVA ,11kv/400 volts	No	8		1,900,000	15,200,000
3.2.4	Distribution transformer of size 200 kVA ,11kv/400 volts	No	6		1,900,000	11,400,000
3.2.5	Distribution transformer of size 2.95 MVA,11kV/575V for steel furnace	No.	4		1,800,000	7,200,000
3.3	SWITCHGEARS					
3.3.1	11/132kV Switchgear Panels complete	No	8		4,200,000	33,600,000
3.3.2	Low Voltage Distribution panels with MCCBs	No	6		2,000,000	12,000,000
3..4.1	Battery and Battery Charger complete	Sets	2		1,496,000	2,992,000
3.4.2	D.C/A.C converters/Inverters,including UPS	Lot	1		8,187,000	8,187,000
3.4.3	220 V D.C distribution Panel	No.	1		4,000,000	4,000,000
3.4.4	48 V D.C distribution Panel	No.	1		6,000,000	6,000,000
3.4.5	CONTROL,Protection and Insrumentation System for Generators and their auxiliaries,Transformers,MV and LV system,including operator station	Lot	1		11,257,000	11,257,000
3.4.6	EARTHING SYSTEM complete including connections to individual equipments/systems				1,980,000	1,980,000
3.4.7	FIRE Detection and fire alarm SYSTEM	Lot	1		3,230,000	3,230,000
3.4.8	Cable trays and MV Power Cables with termination and all other accessories	Lot	1		5,400,000	5,400,000
3.4.9	Cable trays and Low voltage cables with termination and all other accessories	Lot	1		11,500,000	11,500,000
3.4.10	Cable trays and Control Cables with termination and all other accessories	Lot	1		6,500,000	6,500,000

LCC HYDROPOWER PROJECT

COST ESTIMATE OF ELECTROMECHANICAL WORKS

BILL OF QUANTITIES FOR MECHANICAL, HYDRAULIC STEEL STRUCTURE AND ELECTRICAL WORKS

Sr.No	Description	Unit	Qty	Rate Per Unit (Foreign Currency) US Dollar	Rate Per Unit (Local Currency) Pak. Rs.	Total Cost (Local Currency) (Pak. Rs.)
3.4.11	Internal and External lighting power house and fence area.	Lot	1		12,500,000	12,500,000
3.4.12	TELECOMMUNICATION SYSTEM,consisting of PABX,telephone cabling,telephone sets etc.	Lot	1		1,800,000	1,800,000
	Total Electrical (B)					668,130,000
	Total - E& M (A+B)					1,835,109,048

TRIDENT POWER EQUIPMENT TRIDENT GENUINE

1. PROPOSED TARIFF AND ASSUMPTIONS

a. A two part tariff structure based on energy and capacity payments is proposed. Capacity payments shall be payable by the Power Purchaser based on availability of the plant whereas energy payments shall be billed and be payable based on the net electrical output of the Plant under and in accordance with the terms of the PPA.

b. The proposed tariff is summarized as follows:

Proposed Tariff				
Description	Years		Years	
	1-10	11-30	1-10	11-30
	Rs. /KWh	Rs. /KWh	Us Cents /KWh	Us Cents /KWh
Fixed Cost / Capacity Component				
Water usage charges	0.33	0.33	0.19	0.19
Insurance	1.03	0.41	0.61	0.24
Debt Service	10.76	-	6.33	-
Return on equity	2.99	2.99	1.76	1.76
Total Fixed Cost	**15.11**	**3.73**	**8.89**	**2.19**
Variable Cost / Energy Component				
Operation & Maintenance	0.81	0.81	0.47	0.47
Total	15.92	4.54	9.36	2.67

c. The following indexations will be applicable for the proposed tariff:

Component	Applicable Indexation
Variable O&M (Foreign)	PKR/USD Rate and US CPI
Variable O&M (Local)	Pakistan CPI
Fixed O&M (Foreign)	PKR/USD Rate and US CPI
Fixed O&M (Local)	Pakistan CPI
Insurance	PKR/USD Rate on 1st Day of each Agreement Year
Return on Equity	PKR/USD Rates
Principal Repayments	PKR/USD Rates

d. Reference Rate

USD to PKR as per prevailing rate and current date considered for tariff determination is PKR 170 to 1 USD.

2. KEY FEATURES UNDERLYING THE CALCULATION OF PROPOSED TARIFF

a. Project Cost Assumptions

Following is the estimated capital cost of the project:

Description	USD Million
EPC Cost	19.27
Land Cost	0.16
Development Costs	1.12
Insurance during Construction	0.22
Lender's fee and Charges	0.67
Interest during construction (IDC)	1.34
Total Project Cost	**22.78**

i. EPC COST

The cost includes the cost of procurement, engineering, construction, supervision, site preparation, temporary facilities and access to site, boundary wall, powerhouse, Hydromechanical works, headrace and tailrace channels, electromechanical works, transport, installation, testing and commissioning, security costs and accommodation of site staff etc., The EPC cost does not include custom duties or withholding taxes which will be pass-through based on the actual amount.

USD 19.27 Million has been budgeted as the EPC cost, which is expected to be firmed up following the EPC Bidding process.

ii. LAND COST

The total estimated land required for the project is 20 Acres owned by the Punjab Irrigation Department. The company has estimated the land cost at USD 0.16 Million and may be updated at EPC stage. The cost of the land plus stamp duty and other associated costs will be adjusted at actual at COD.

TRIDENT POWER (PRIVATE) LIMITED TRIDENT

iii. DEVELOPMENT COSTS

a. Cost of Studies and Consultants

Project Development cost include the cost of feasibility study incorporating the topographic surveying and levelling, geotechnical & geophysical investigations, initial environmental examination, hydrology and sedimentation studies, etc., as well as the fees for legal counsel, technical consultant, financial advisor, owner's engineer, training and regulatory fees etc., These costs have been incorporated and will be updated at EPC stage and may be adjusted as per actual at COD.

b. Company and Sponsor Costs

Company and sponsor costs include administrative costs expected to be incurred by the owner prior COD. This will include the cost of salaries, office rentals, travel, utilities and other establishment costs. The company has budgeted USD 1.12 Million for these costs and will be adjusted as per actual at COD.

iv. INSURANCE DURING CONSTRUCTION

Insurance premiums to be incurred prior to COD have been estimated at 1.00 % of EPC cost and amount to USD 0.22 Million.

v. LENDER'S FEE AND CHARGES

This covers arrangement, commitment, agency, trustee, monitoring and other fees payable to the lending banks as well as fees payable to legal, technical and insurance advisors employed by the leading banks for the purpose of the financing. These fees have been currently budgeted at 3 % of the debt amount (excluding any sales and withholding taxes) and amount to USD 0.67 Million.

vi. INTEREST DURING CONSTRUCTION

IDC has been calculated on the basis over a 36 Month Construction period, a 80:20 debt to equity ratio and based on financing from foreign lenders.

Based on the above assumptions, the Interest during Construction for the project is estimated at USD 1.34 Million.

Interest during construction shall be subject to adjustments based on firm offer from lending banks and the actual disbursement schedule.

The company will avail the State Bank of Pakistan's ("SOP") Refinancing Scheme for Renewable Projects. In this case, IDC will be based on the actual cost and adjusted accordingly.

c. Capital Structure Assumptions

The project is to be funded based on a debt to equity ratio of 80:20. Based on the financial structure the Sponsors shall subscribe on equity of USD 4.56 Million in the project while USD 10.09 Million shall be raised from the lenders. A summary of the proposed capital structure is given in the table below:

Capital Structure	USD Million
Equity	3.73
Debt	18.22
Total Project Cost	22.78
Debt: Equity	80:20

d. Financing Cost Assumptions

Financing costs are based on a local debt with the duration of 10 years after COD whereas a construction duration of two years is over and above of 10 years of debt service. Debt repayment is assumed on monthly basis. The interest cost is based on the financing from local banks and subsequent adjustments shall be made due to variation in interest rates or PKR/USD exchange rate on quarterly basis.

e. Return on Equity (ROE)

An IRR of 13% has been assumed for the purpose of calculation of the ROE component. This is lower than NEPRA's recent tariff determinations on similar projects.

f. Operations & Maintenance (O&M) Costs

It includes salaries of staff, boarding, lodging and plant maintenance cost. It expected to be incurred in the following pattern.

TRIDENT POWER GR (PRIVATE) LIMITED TRIDENT

Operation and Maintenance Cost		
Year	Average Amount (Rs.) / Year	Amount (Rs.) Total
1-3	35,900,500	107,701,500
4-5	35,900,500	7,1801,000
6-10	35,900,500	179,502,500
11-30	35,900,500	718,010,000
Total	**35,900,500**	**1,077,015,000**

g. Assumptions

i. The timing of drawdown of debt and equity may vary from those specified in this petition and accordingly the project cost shall be adjusted at the time of COD as per actual IDC. Similarly, ROE will also be updated at the time of COD.

ii. Adjustments in project costs due to variation in PKR / USD will be made at the time of COD.

iii. Interest rates shall be adjusted as per prevailing rates considered during EPC and shall be adjusted at the time of COD.

iv. No Withholding taxes or any custom duties considered in the tariff preparation and will be adjusted at the time of COD as per actual.

v. Attraction of withholding taxes and or advance taxes on payments to O&M and EPC Contractor is a pass through.

h. Pass Through

i. No withholding tax on dividend has been included in the tariff and we have considered that any payment of withholding tax on dividend as pass through at the time of actual payment of dividend.

TRIDENT POWER (PRIVATE) LIMITED
TRIDENT

ii. Any sort of payments like EOBI or workers' welfare funds, pension contributions or Zakat etc.,

iii. No tax on income of company (including proceeds against sale of electricity to CPPA-G/NTDC/DISCO) has been assumed. Corporate tax, turnover tax, general sales tax / provincial sales tax all other taxes, excise duty levies, fees etc., shall be treated as pass through item.

iv. Withholding tax on debt servicing component of tariff has not been considered.

v. No hedging cost is assumed for exchange rate fluctuations during construction and all cost overruns resulting from variations in the exchange rate during construction shall be allowed as pass through.

vi. Any cost incurred by the project company, which is required to be incurred by Power Purchaser pursuant to provisions of PPA shall also be treated as pass through.

vii. If the company is required to make payment of withholding tax on debt servicing the same shall be treated as pass through item. The Power Purchaser shall reimburse the company the actual amount paid on this account.

viii. Costs incurred or suffered by the Project Company for any exchange in general assumptions shall be a pass through item.

i. Other Terms and Conditions

i. No corporate Income Tax assumed throughout the life of the project. If any tax is payable the same shall be passed-through to the Power Purchaser.

ii. No sales-tax, value-added tax, federal excise duty or any other tax has been assumed for the sale of Power to the Power Purchaser. Any tax levied on the sale of power to the Power Purchaser as per law shall be billed and be payable by the Power Purchaser accordingly.

iii. No federal or provincial sales taxes considered on services and goods as part of the project or operating costs. The same shall either be adjusted in the Project Cost or considered a pass-through item at actual.

iv. Any costs arising out of modifications / amendments by the Power Purchaser or any other governmental authority shall be considered pass-through to the Power Purchaser.

v. In the light of above submissions, TPJBPL requests the learned Authority to kindly approve the proposed tariff alongwith the pertinent indexations to remain effective for a period of 30 years from COD on a fast-track basis.

TRIDENT POWER GN (PRIVATE) LIMITED

Production Estimate
LCC Hydro Power Project

Plant Capacity (MGWh)	7.5
Plant factor	68%
Production (Annual) KWH	44,505,180
Production (Over life) KWH	1,335,155,400
Conversion Rate	170

Proposed Tariff

Description	Years		Years	
	1-10	11-30	1-10	11-30
	Rs. /KWh	Rs. /KWh	Us Cents /KWh	Us Cents /KWh
Fixed Cost				
Water usage charges	0.33	0.33	0.19	0.19
Insurance	1.03	0.41	0.61	0.24
Debt Service	10.76	-	6.33	-
Return on equity	2.99	2.99	1.76	1.76
Total Fixed Cost	15.11	3.73	8.89	2.19
Variable Cost				
Operation & Maintenance	0.81	0.81	0.47	0.47
Total	15.92	4.54	9.36	2.67

TRIDENT POWER GP TRIDENT LIMITED

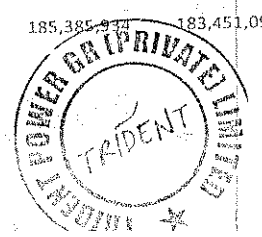
Levelized Traiff

Tariff Components	Years									
	1	2	3	4	5	6	7	8	9	10
Fixed Charges										
Operation & maintenance	-	-	-	-	-	-	-	-	-	-
Water usage charges	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709
Insurance	41,563,124	54,175,382	52,240,547	50,305,712	48,370,877	46,436,042	44,501,207	42,566,372	40,631,537	38,696,702
Debt Service	478,950,604	478,950,604	478,950,604	478,950,604	478,950,604	478,950,604	478,950,604	478,950,604	478,950,604	478,950,604
return on equity	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890
Total Fixed Charges	668,064,327	680,676,585	678,741,750	676,806,915	674,872,080	672,937,245	671,002,410	669,067,575	667,132,740	665,197,905
Variable charges										
Operation & maintenance	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500
Total	703,964,827	716,577,085	714,642,250	712,707,415	710,772,580	708,837,745	706,902,910	704,968,075	703,033,240	701,098,405

Tariff Components	Years									
	11	12	13	14	15	16	17	18	19	20
Fixed Charges										
Operation & maintenance	-	-	-	-	-	-	-	-	-	-
Water usage charges	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709
Insurance	36,761,867	34,827,031	32,892,196	30,957,361	29,022,526	27,087,691	25,152,856	23,218,021	21,283,186	19,348,351
Debt Service	-	-	-	-	-	-	-	-	-	-
return on equity	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890
Total Fixed Charges	184,312,465	182,377,630	180,442,795	178,507,960	176,573,125	174,638,290	172,703,455	170,768,620	168,833,785	166,898,950
Variable charges										
Operation & maintenance	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500
Total	220,212,965	218,278,130	216,343,295	214,408,460	212,473,625	210,538,790	208,603,955	206,669,120	204,734,285	202,799,450

Tariff Components	Year									
	21	22	23	24	25	26	27	28	29	30
Fixed Charges										
Operation & maintenance	-	-	-	-	-	-	-	-	-	-
Water usage charges	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709	14,686,709
Insurance	17,413,516	15,478,681	13,543,846	11,609,010	9,674,175	7,739,340	5,804,505	3,869,670	1,934,835	(0)
Debt Service	-	-	-	-	-	-	-	-	-	-
return on equity	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890	132,863,890
Total Fixed Charges	164,964,115	163,029,280	161,094,445	159,159,609	157,224,774	155,289,939	153,355,104	151,420,269	149,485,434	147,550,599
Variable charges										
Operation & maintenance	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500	35,900,500
Total	200,864,615	198,929,780	196,994,945	195,060,109	193,125,274	191,190,439	189,255,604	187,320,769	185,385,934	183,451,099

Total PV	1,921,578,568
Production	1,335,155,400
Levelized Tariff Cents/KWH	5.42



LEO POWER PROJECT
REFERENCE TARIFF TABLE

YEAR	PROJECT COST	VARIABLE O&M		Water Discharge	Insurance Cost	TOTAL COST	CAPACITY KWh	CPP CHARGES	EPP CHARGES	TOTAL REVENUES	NET REVENUES
		Local	Foreign								
1	(1,549,030,756)	-	-	-	-	(1,549,030,756)	-	-	-	-	(1,549,030,756)
2	(1,549,030,756)	-	-	-	-	(1,549,030,756)	-	-	-	-	(1,549,030,756)
3	(774,515,378)	-	-	-	-	(774,515,378)	-	-	-	-	(774,515,378)
4	-	(17,950,250)	(17,950,250)	(14,686,709)	(41,563,124)	(92,150,333)	44,505,180	14.78	1.14	708,350,453	616,200,120
5	-	(17,950,250)	(17,950,250)	(14,686,709)	(54,175,382)	(104,762,592)	44,505,180	14.78	1.14	708,350,453	603,587,861
6	-	(17,950,250)	(17,950,250)	(14,686,709)	(52,240,547)	(102,827,757)	44,505,180	14.78	1.14	708,350,453	605,522,697
7	-	(17,950,250)	(17,950,250)	(14,686,709)	(50,305,712)	(100,892,922)	44,505,180	14.78	1.14	708,350,453	607,457,532
8	-	(17,950,250)	(17,950,250)	(14,686,709)	(48,370,877)	(98,958,086)	44,505,180	14.78	1.14	708,350,453	609,392,367
9	-	(17,950,250)	(17,950,250)	(14,686,709)	(46,436,042)	(97,023,251)	44,505,180	14.78	1.14	708,350,453	611,327,202
10	-	(17,950,250)	(17,950,250)	(14,686,709)	(44,501,207)	(95,088,416)	44,505,180	14.78	1.14	708,350,453	613,262,037
11	-	(17,950,250)	(17,950,250)	(14,686,709)	(42,566,372)	(93,153,581)	44,505,180	14.78	1.14	708,350,453	615,196,872
12	-	(17,950,250)	(17,950,250)	(14,686,709)	(40,631,537)	(91,218,746)	44,505,180	14.78	1.14	708,350,453	617,131,707
13	-	(17,950,250)	(17,950,250)	(14,686,709)	(38,696,702)	(89,283,911)	44,505,180	14.78	1.14	708,350,453	619,066,542
14	-	(17,950,250)	(17,950,250)	(14,686,709)	(36,761,867)	(87,349,076)	44,505,180	3.40	1.14	201,832,032	114,482,956
15	-	(17,950,250)	(17,950,250)	(14,686,709)	(34,827,031)	(85,414,241)	44,505,180	3.40	1.14	201,832,032	116,417,791
16	-	(17,950,250)	(17,950,250)	(14,686,709)	(32,892,196)	(83,479,406)	44,505,180	3.40	1.14	201,832,032	118,352,626
17	-	(17,950,250)	(17,950,250)	(14,686,709)	(30,957,361)	(81,544,571)	44,505,180	3.40	1.14	201,832,032	120,287,461
18	-	(17,950,250)	(17,950,250)	(14,686,709)	(29,022,526)	(79,609,736)	44,505,180	3.40	1.14	201,832,032	122,222,297
19	-	(17,950,250)	(17,950,250)	(14,686,709)	(27,087,691)	(77,674,901)	44,505,180	3.40	1.14	201,832,032	124,157,132
20	-	(17,950,250)	(17,950,250)	(14,686,709)	(25,152,856)	(75,740,065)	44,505,180	3.40	1.14	201,832,032	126,091,967
21	-	(17,950,250)	(17,950,250)	(14,686,709)	(23,218,021)	(73,805,230)	44,505,180	3.40	1.14	201,832,032	128,026,802
22	-	(17,950,250)	(17,950,250)	(14,686,709)	(21,283,186)	(71,870,395)	44,505,180	3.40	1.14	201,832,032	129,961,637
23	-	(17,950,250)	(17,950,250)	(14,686,709)	(19,348,351)	(69,935,560)	44,505,180	3.40	1.14	201,832,032	131,896,472
24	-	(17,950,250)	(17,950,250)	(14,686,709)	(17,413,516)	(68,000,725)	44,505,180	3.40	1.14	201,832,032	133,831,307
25	-	(17,950,250)	(17,950,250)	(14,686,709)	(15,478,681)	(66,065,890)	44,505,180	3.40	1.14	201,832,032	135,766,142
26	-	(17,950,250)	(17,950,250)	(14,686,709)	(13,543,846)	(64,131,055)	44,505,180	3.40	1.14	201,832,032	137,700,977
27	-	(17,950,250)	(17,950,250)	(14,686,709)	(11,609,010)	(62,196,220)	44,505,180	3.40	1.14	201,832,032	139,635,812
28	-	(17,950,250)	(17,950,250)	(14,686,709)	(9,674,175)	(60,261,385)	44,505,180	3.40	1.14	201,832,032	141,570,647
29	-	(17,950,250)	(17,950,250)	(14,686,709)	(7,739,340)	(58,326,550)	44,505,180	3.40	1.14	201,832,032	143,505,482
30	-	(17,950,250)	(17,950,250)	(14,686,709)	(5,804,505)	(56,391,715)	44,505,180	3.40	1.14	201,832,032	145,440,318
31	-	(17,950,250)	(17,950,250)	(14,686,709)	(3,869,670)	(54,456,880)	44,505,180	3.40	1.14	201,832,032	147,375,153
32	-	(17,950,250)	(17,950,250)	(14,686,709)	(1,934,835)	(52,522,044)	44,505,180	3.40	1.14	201,832,032	149,309,988
33	-	(17,950,250)	(17,950,250)	(14,686,709)	-	(50,587,209)	44,505,180	3.40	1.14	201,832,032	151,244,823
TOTAL	(3,872,576,891)	(538,507,500)	(538,507,500)	(440,601,282)	(827,186,168)	(6,217,299,341)	1,335,155,400	-	-	11,120,145,176	4,902,845,835

TRIDENT POWER EQUIPMENT LIMITED

LCC POWER PROJECT
CASH FLOW STATEMENT

YEAR	PROJECT COST	VARIABLE O&M		Water Discharge	Insurance Cost	TOTAL COST	CAPACITY KWh	CPP CHARGES	EPP CHARGES	TOTAL REVENUES	NET REVENUES
		Local	Foreign								
						(1,549,030,756)	-	-	-	-	(1,549,030,756)
1	(1,549,030,756)	-				(1,549,030,756)	-	-	-	-	(1,549,030,756)
2	(1,549,030,756)	-				(774,515,378)					(774,515,378)
3	(774,515,378)					(92,150,333)	44,505,180	14.78	1.14	708,350,453	616,200,120
4	-	(17,950,250)	(17,950,250)	(14,686,709)	(41,563,124)	(104,762,592)	44,505,180	14.78	1.14	708,350,453	603,587,861
5	-	(17,950,250)	(17,950,250)	(14,686,709)	(54,175,382)	(102,827,757)	44,505,180	14.78	1.14	708,350,453	605,522,697
6	-	(17,950,250)	(17,950,250)	(14,686,709)	(52,240,547)	(100,892,922)	44,505,180	14.78	1.14	708,350,453	607,457,532
7	-	(17,950,250)	(17,950,250)	(14,686,709)	(50,305,712)	(98,958,086)	44,505,180	14.78	1.14	708,350,453	609,392,367
8	-	(17,950,250)	(17,950,250)	(14,686,709)	(48,370,877)	(97,023,251)	44,505,180	14.78	1.14	708,350,453	611,327,202
9	-	(17,950,250)	(17,950,250)	(14,686,709)	(46,436,042)	(95,088,416)	44,505,180	14.78	1.14	708,350,453	613,262,037
10	-	(17,950,250)	(17,950,250)	(14,686,709)	(44,501,207)	(93,153,581)	44,505,180	14.78	1.14	708,350,453	615,196,872
11	-	(17,950,250)	(17,950,250)	(14,686,709)	(42,566,372)	(91,218,746)	44,505,180	14.78	1.14	708,350,453	617,131,707
12	-	(17,950,250)	(17,950,250)	(14,686,709)	(40,631,537)	(89,283,911)	44,505,180	14.78	1.14	708,350,453	619,066,542
13	-	(17,950,250)	(17,950,250)	(14,686,709)	(38,696,702)	(87,349,076)	44,505,180	3.40	1.14	201,832,032	114,482,956
14	-	(17,950,250)	(17,950,250)	(14,686,709)	(36,761,867)	(85,414,241)	44,505,180	3.40	1.14	201,832,032	116,417,791
15	-	(17,950,250)	(17,950,250)	(14,686,709)	(34,827,031)	(83,479,406)	44,505,180	3.40	1.14	201,832,032	118,352,626
16	-	(17,950,250)	(17,950,250)	(14,686,709)	(32,892,196)	(81,544,571)	44,505,180	3.40	1.14	201,832,032	120,287,461
17	-	(17,950,250)	(17,950,250)	(14,686,709)	(30,957,361)	(79,609,736)	44,505,180	3.40	1.14	201,832,032	122,222,297
18	-	(17,950,250)	(17,950,250)	(14,686,709)	(29,022,526)	(77,674,901)	44,505,180	3.40	1.14	201,832,032	124,157,132
19	-	(17,950,250)	(17,950,250)	(14,686,709)	(27,087,691)	(75,740,065)	44,505,180	3.40	1.14	201,832,032	126,091,967
20	-	(17,950,250)	(17,950,250)	(14,686,709)	(25,152,856)	(73,805,230)	44,505,180	3.40	1.14	201,832,032	128,026,802
21	-	(17,950,250)	(17,950,250)	(14,686,709)	(23,218,021)	(71,870,395)	44,505,180	3.40	1.14	201,832,032	129,961,637
22	-	(17,950,250)	(17,950,250)	(14,686,709)	(21,283,186)	(69,935,560)	44,505,180	3.40	1.14	201,832,032	131,896,472
23	-	(17,950,250)	(17,950,250)	(14,686,709)	(19,348,351)	(68,000,725)	44,505,180	3.40	1.14	201,832,032	133,831,307
24	-	(17,950,250)	(17,950,250)	(14,686,709)	(17,413,516)	(66,065,890)	44,505,180	3.40	1.14	201,832,032	135,766,142
25	-	(17,950,250)	(17,950,250)	(14,686,709)	(15,478,681)	(64,131,055)	44,505,180	3.40	1.14	201,832,032	137,700,977
26	-	(17,950,250)	(17,950,250)	(14,686,709)	(13,543,846)	(62,196,220)	44,505,180	3.40	1.14	201,832,032	139,635,812
27	-	(17,950,250)	(17,950,250)	(14,686,709)	(11,609,010)	(60,261,385)	44,505,180	3.40	1.14	201,832,032	141,570,647
28	-	(17,950,250)	(17,950,250)	(14,686,709)	(9,674,175)	(58,326,550)	44,505,180	3.40	1.14	201,832,032	143,505,482
29	-	(17,950,250)	(17,950,250)	(14,686,709)	(7,739,340)	(56,391,715)	44,505,180	3.40	1.14	201,832,032	145,440,318
30	-	(17,950,250)	(17,950,250)	(14,686,709)	(5,804,505)	(54,456,880)	44,505,180	3.40	1.14	201,832,032	147,375,153
31	-	(17,950,250)	(17,950,250)	(14,686,709)	(3,869,670)	(52,522,044)	44,505,180	3.40	1.14	201,832,032	149,309,988
32	-	(17,950,250)	(17,950,250)	(14,686,709)	(1,934,835)	(50,587,209)	44,505,180	3.40	1.14	201,832,032	151,244,823
33	-	(17,950,250)	(17,950,250)	(14,686,709)	-						
TOTAL	(3,872,576,891)	(538,507,500)	(538,507,500)	(440,601,282)	(827,106,168)	(6,217,299,341)	1,335,155,400	-	-	11,120,145,176	4,902,845,835

TRIDENT POWER DEVELOPMENT LIMITED
TRIDENT

Debt Service	Rs.
Total cost of project	3,872,576,891
Debt Financed origional	3,098,061,513
Debt Finance with capitalised interest	3,525,118,139.32
Cost of debt	6.0000%
Per year return	478,950,604
Return over life	4,789,506,041
Interest	1,691,444,528

	Rs.
Bank Loan first year	1,239,224,605
Interest first year	74,353,476
Total Loan as at First year end	1,313,578,081
Second loan installment	1,239,224,605
Interest second year	153,168,161
Total Loan outstanding at second year	2,705,970,848
Third loan Installment	619,612,303
Interest Third year	199,534,989
Total Loan	**3,525,118,139**

Loan Schedule

Year	Opening Balance	Installment	Interest	Principal	Closing Balance
1	3,525,118,139	478,950,604	211,507,088	267,443,516	3,257,674,624
2	3,257,674,624	478,950,604	195,460,477	283,490,127	2,974,184,497
3	2,974,184,497	478,950,604	178,451,070	300,499,534	2,673,684,963
4	2,673,684,963	478,950,604	160,421,098	318,529,506	2,355,155,456
5	2,355,155,456	478,950,604	141,309,327	337,641,277	2,017,514,180
6	2,017,514,180	478,950,604	121,050,851	357,899,753	1,659,614,426
7	1,659,614,426	478,950,604	99,576,866	379,373,738	1,280,240,688
8	1,280,240,688	478,950,604	76,814,441	402,136,163	878,104,525
9	878,104,525	478,950,604	52,686,272	426,264,333	451,840,193
10	451,840,193	478,950,604	27,110,412	451,840,193	(0)
		4,789,506,041	1,264,387,901	3,525,118,139	

TRIDENT POWER CO (PVT) LIMITED TRIDENT