BEFORE

THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

APPLICATION FOR SEEKING FEASIBILITY STAGE TARIFF

ON BEHALF OF SAPPHIRE HYDRO LIMITED

IN RESPECT OF ITS 150 MW SHARMAI HYDRO POWER PROJECT AT PANJKORA RIVER, UPPER DIR DISTRICT,

KHYBER PAKHTUNKHWA

Dated: 22nd April, 2019]

Legal & Regulatory Consultant

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150 MW SHARMAI Hydropower Project
Feasibility Level Tariff Application

Mr. Safeer Hussain
Registrar
National Electric Power Regulatory Authority
NEPRA Tower Attaturk Avenue (East)
Sector G-5/1, Islamabad

Dated: 22nd April 2019

APPLICATION

(Rule 3 of the NEPRA tariff Standards and Procedure Rules, 1998)

Subject: **Submission of the Feasibility Stage Tariff Petition of 150 MW SHARMAI Hydro Project**

Dear Sir,

I, Shahid Abdullah, Chief Executive Officer, being the duly authorized representative of Sapphire Hydro Limited by virtue of board resolution dated 15th February, 2019, hereby submit this application for the feasibility stage Tariff for our 150 MW Sharmai Hydro Power Plant and request National Electric Power Regulatory Authority's (**"NEPRA" or "Authority"**) approval.

I certify that the documents-in-support attached with this Application are prepared and submitted in conformity with the provision of NEPRA (Tariff Standards and Procedure) Rules, 1998 and undertake to abide by the terms and provisions of above-said rules. 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 in the sum of Rupees [1,673,040] (Pakistani Rupees One million six hundred seventy three thousand forty Only), being the non-refundable application processing fee calculated in accordance with NEPRA Tariff Standards and Procedure) Regulations, 2002, 2011, is also attached herewith.

I hereby request the Authority for kind consideration and favorable approval of our tariff petition by the Authority in accordance, inter alia, with section 31 of the Regulation of Generation Transmission and Distribution of Electric Power Act, 1997 read with Rule 3 of the NEPRA tariff Standards and Procedure Rules, 1998 and other applicable provisions of NEPRA law.

Yours sincerely,

Shahid Abdullah
Chief Executive Officer
Sapphire Hydro Limited

REGISTRAR
Dy. No. 3598
Dated: 23-04-19

The Tariff Petition (including its Annexures) is submitted in triplicate together with:

1. Proposed 50 Year Tariff (**Annexure A**)
2. Debt Repayment Schedule (**Annexure B**)
3. Board Resolution of Sapphire Hydro Limited dated 15th February, 2019 (**Annexure C**)
4. Affidavit of Mr. Shahid Abdullah dated (**Annexure D**)
5. Bank Draft amounting to Rs. 1,539,197/- (**Annexure E**)
6. Audited Financial Statement (**Annexure F**)
7. Location Plan (**Annexure G**)
8. Certificate of incorporation of the Company (**Annexure H**)
9. Articles of Association / Memorandum of Association of the Company (**Annexure I**)

SAPPHIRE HYDRO LIMITED

TABLE OF CONTENTS

SAPPHIRE HYDRO LIMITED

1. PETITITIONER DETAILS:

a) Petitioner Name, Authorized Representative and Address

Sapphire Hydro Limited
Authorized Representative: Mr. Shahid Abdullah, CEO
7-A/K Main Boulevard Gulberg II
Lahore
Telephone: 042-111-000-100
Fax 042-35758783
E-mail: shahid.abdullah@sapphire.com.pk

2. BASIS FOR TARIFF PETITION

a) NEPRA Act and NEPRA Rules

This Petition is made under the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of) 1997 (the "**NEPRA Act**"), to the National Electric Power Authority ("**NEPRA**") and the Tariff Standards and Procedure Rules, 1998 (the "**NEPRA Rules**") made under the NEPRA Act; and other applicable laws.

NEPRA is responsible under the NEPRA Act to determine tariffs, rates and other terms and conditions for the supply of electric power services by the generation, transmission, and distribution companies and to recommend them to the Federal Government for notification. NEPRA is also responsible for determining the process and procedures for reviewing and approving tariffs and tariff adjustments.

b) Mechanism for determination of Tariff for Hydro Power Projects

In order to cater to the unique nature of hydropower plants, wherein cost uncertainty due to a long gestation period is neither in the control of the Petitioner nor the Power Purchaser, NEPRA has developed a Mechanism for Determination of Tariff for Hydropower Projects (the "**Mechanism**"). The Mechanism provides for determination of tariff and subsequent adjustments at different stages of development of hydropower projects. In this respect three distinct stages have been identified in the Mechanism:

1. Feasibility stage
2. EPC stage; and
3. Final cost stage (which is to be no later than Commercial Operations Date ("**COD**")

This Petition is intended to provide a basis for NEPRA to render a tariff determination, which is applicable to the Feasibility stage. Subsequent tariff determinations will be made in accordance with the Mechanism at a future date.

c) BACKGROUND

a) The 150 MW SHARMAI Hydropower Project ("the **Project**") is being planned and developed by Sapphire Hydro Limited ("**Company**") subject to environmental approvals being granted to the special purpose vehicle ("**SPV**") incorporated to develop the Project. The Project is expected to generate 689.838 GWh of electrical output annually.

SAPPHIRE HYDRO LIMITED

b) The Project is to be located in District Dir on Panjkora River. The project site is about 248 kilometers from the city of Peshawar.

c) The Project is being developed by a private sector company under the Khyber Pakhtunkhwa Hydro Power Policy 2016 and on a Build-Own-Operate-Transfer ("**BOOT**") basis with a concession period of 50 years following the commercial operations of the Project.

d) The Letter of Intent (**"LOI"**) for development of the Project was issued to the Company on 20 March 2017 vide letter No.595-603/PEDO/DPP/SECL by Pakhtunkhwa Energy Development Organization (**"PEDO"**).

e) As per the terms of the LOI and the Khyber Pakhtunkhwa Hydro Power Policy 2016 ("**Policy**"), sponsors appointed FICHTNER GMBH &Co. KG, SARWEYSTRASSE as consultants **("Consultants")** to conduct a feasibility study (the "**Feasibility Study**") for the Project. During the feasibility stage, sponsors and consultants regularly briefed the Panel of Experts ("**POE**"), appointed by the PEDO, on the progress, investigations and analysis of the feasibility level studies. The Feasibility Study was approved by PEDO vide their letter no. 162-68/PEDO/DRE/FS dated 25th January 2019.

f) Under the provisions of the Feasibility Study approval, Sponsors were directed to approach the Authority for determination of the feasibility level tariff **("Feasibility Level Tariff")** under the provisions of the Policy and Mechanism for Determination of Tariffs for Hydropower Projects by the Authority.

g) Pursuant to the above, this application is a request on behalf of the Company to the Authority for approval of a Feasibility Level Tariff for the 150 MW SHARMAI Hydropower Project based on preliminary feasibility level EPC costs under Rule 3 of the National Electric Power Regulatory Authority Tariff (Standard and Procedure) Rules, 1998 and provisions of Mechanism for Determination of Tariffs for Hydropower Projects.

d) REQUEST FOR TARIFF DETERMINATION

Pursuant to the relevant provisions of the NEPRA Act, read with the provisions of the Rules and Regulations made thereunder and in accordance with the Policy, Sapphire Hydro Limited (the "**Project Company**") submits herewith before NEPRA, for its approval, this tariff petition (the "**Tariff Petition**") for approval of the reference generation tariff (the "**Reference Generation Tariff**"); the Indexations, Adjustments and Escalations; and other matters set out in this Tariff Petition in each case for SHARMAI Hydropower Project to be located in Dir District of Khyber Pakhtunkhwa.

All requisite information required by NEPRA for processing the Petition has been annexed herewith; Project Company will be pleased to submit any further information as and when required by NEPRA in connection with the determination.

NEPRA is kindly requested to process the Tariff Petition at the earliest thereby enabling the Company to proceed further with the development process.

SAPPHIRE HYDRO LIMITED

3. NEED FOR THE PROJECT

a. Pakistan suffers from a huge electricity deficit due to a heavy reliance on imported fuels, and this deficiency has become a significant impediment to socio-economic development in the country. This scenario creates an increase in local fuel prices and limits potentials in the establishment of new industrial zones. Pakistan's main response to its energy crisis has been to increase its acquisition of fossil fuels. But the country's abundant sources of renewable energy could make for a much more sustainable, and greener, solution. Renewable Energy provides an effective option for the provision of energy services from the technical point of view while hydropower, a major source of energy has its appeal in its viability for large-scale energy production. Hydropower is renewable, reliable, clean, and largely carbon-free, and represents a flexible peak-load technology. In Pakistan the availability of power has been continually falling short of the demand of 25,227 MW (Source: NEPRA State of Industry Report 2017) and as a result, the country is experiencing power shortages of varying degrees in different parts of the country. Geographically, Pakistan has been blessed with river flows that are naturally supportive to electricity generation.

b. Pakistan already derives around 27.17 percent of its energy from hydroelectricity (Source: NEPRA State of Industry Report 2017). The presence of hydroelectricity in Pakistan is set to grow. Only approximately 7,320 MW of the country's estimated 60,000 MW hydro potential has so far been exploited (Source: International Hydro Power Association https://www.hydropower.org/country-profiles/pakistan).

Khyber Pakhtunkhwa has a number of key sites with considerable potential for hydroelectric development, by virtue of their favorable topographical and geological features, together with a suitable reservoir area and adequate and dependable runoff. For the first time, private sector has been invited to participate in development of such identified potential hydro power production sites by the provincial government through Pakhtunkhwa Energy Development Organization (PEDO).

c. Pakistan has been pre-dominantly reliant on conventional thermal sources for generating electricity and adversely affects the economy of the country. The way forward to optimize energy mix is to generate energy through renewable sources such as water, wind and solar. Among these, hydropower is the most economical resource available in Pakistan. Furthermore, like other renewable energy sources, hydroelectric plants are immune to price increases associated with fossil fuels such as oil, natural gas and coal.

d. Other key advantages of electricity generation through utilization of hydropower are provided below:

- Hydroelectric plants provide cheaper electricity for longer term.
- Hydropower generating units allow better use of system load management
- Historical data for hydrology provides reliable basis to predict generation from hydropower plant.
- Labor cost tends to be low since plants are generally heavily automated and have personnel on site during normal operation
- Some Hydropower plants provide a means for flood prevention and can act as means of storage during drought

e. In the category of renewables, hydroelectric power generation provides comparatively more reliable source of generation with added advantage of being used as baseload source of power generation. In some instances, these are being used for peaking operation too. Compared to this, the solar and wind source of power generation offers lesser reliability owing to larger variations (even on hourly basis) and hence less likely to provide stable power supply to grid.

4. PROJECT SUMMARY

a. PROJECT SETTING AND SUMMARY DESCRIPTION

The project site, SHARMAI HPP on Panjkora River, is located in Dir district at the north of Khyber Pakhtunkhwa Province of the north-western region of Pakistan. The project site is accessible by the national highway N-45. It is about 248 km towards north from Peshawar, the capital city of the Province and it is about 10 km towards east from Dir city, headquarter of the district.

The Project site is situated in the upstream reach of the Panjkora River which confluences into the Swat River as its right tributary (the largest tributary of Swat River).

b. SALIENT FEATURES OF THE PROJECT

Province	Khyber Pakhtunkhwa
Nearest Town	Darora Village Latitude: 35°11'18.30"N Longitude:71°57'45.16" E
River	Panjkora
Project Location	Upper Dir District
Project Characteristics	
Hydrology	
Gross Head at maximum operating level	200.8 m
Design Discharge	90 Cumecs
Installed capacity (NET)	150.6 MW
Average annual rainfall	1,428 mm
Period of recorded river flow	1961 to 2016 - 56 years
Local river flow gauging station	Sharmai Gauging Station Chakdara Gauging Station Kalam Gauging Station
Plant Factor	52.29%
Hydro Mechanical Equipment	
Type	Francis Vertical shaft Turbine
No. of units	3
Rated Discharge per unit	30 cumecs
Capacity per unit (Gross)	50.7 MW
Unit speed	428.6 rpm
System Frequency	50 Hz
Reservoir	
Max Reservoir Operating Level	1260 masl
Min Reservoir Operating Level	1255 masl
Dam Structure	
Dam Height	45 m
Dam crest level	1265 masl
Dam width in crest	150 m
Head race Tunnel	
Diameter	6.75 m
Length	8.5 km

c. PROJECT MILESTONES

The Project has successfully achieved following milestones:

a. Establishment of Project Company in the name of Sapphire Hydro Limited on 7th September 2017;
b. Obtained LOI on 20th March 2017; and
c. Feasibility study completed and approved by PEDO, POE on 25th January 2019.

5. ENVIRONMENT

a. On the basis of field findings during the Environmental and Social Impact Assessment ("**ESIA**"), the proposed Project will not have significant adverse impacts on the local population or any segment of environment. Impacts, identified by ESIA consultant, are easily manageable by undertaking, in letter and spirit, the mitigation measures suggested in the Feasibility Study.

6. IMPLEMENTATION SCHEDULE

a. The proposed project implementation schedule spans over a period of [54] months.

7. PROPOSED TARIFF & ASSUMPTIONS

a. Key Project Tariff Parameters

Capacity	150.6 MW
Net Annual Generation (average hydrology)	689.839 GWh
Plant Factor	52.29%
Feasibility Level EPC Cost	[319.529] Million USD
Total Project Cost	[400.778] Million USD

b. Proposed Tariff

i. The proposed tariff (**"Proposed Tariff"**) being submitted is a levelized tariff US Cents [8.0957]/kWh (or Rs. [8.4762]/kWh) for a 50-year term. The tariff structure consists of a Capacity Purchase Price and an Energy Purchase Price as per respective components stated below. A detailed 50-year tariff table is provided in Annex 1.

All Figures in PKR/kWh	**Year 1-13**	**Year 13-30**	**Year 30-50**
Water Use Charge	0.4250	0.4250	0.4250
Energy Purchase Price	**0.4250**	**0.4250**	**0.4250**
Fixed O&M (Local)	0.1183	0.1183	0.1183
Fixed O&M (Foreign)	0.4733	0.4733	0.4733
Insurance	0.2536	0.2536	0.2536
Return on Equity	1.4716	1.4716	
Debt Servicing	2.7479		
Capacity Purchase Price	**5.0648**	**2.3169**	**0.8453**
Total Tariff	**10.111**	**4.856**	**2.042**
Levelized (Year 1-50) (PKR/kWh)			**8.4823**
Levelized (Year 1-50) (US cents/kWh) (@			**8.1015**

SAPPHIRE HYDRO LIMITED

PKR 104.7/USD)		

ii. The Company shall be paid a fixed amount each month in terms of the Capacity Purchase Price which shall be based on the tested capacity of the Plant and the average/estimated hydrology stated in the Feasibility Study and a variable amount in the form of Energy Purchase Price which shall be paid based on the actual energy delivered to the grid.

c. Project Cost Calculations

i. The total estimated cost for the Project ("**Project Cost**") is based on Engineering; Procurement & Construction ("**EPC**") contract price of USD [319.529] million, optimized from the Feasibility Study, is USD [400.777] million including interest during construction in the amount of USD [35.742] million.

ii. The break-up of the Project Cost proposed is provided below, which shall be firmed up at the time of filing of the EPC Level Tariff with the Authority:

Item	USD Million
EPC Cost	316.252
Custom Duty	3.277
Total EPC Cost	**319.529**
Non-EPC Cost	39.116
Lenders Financing Fee	6.390
Project Cost before IDC	**365.035**
Interest During Construction	35.742
Total Project Cost	**400.777**

d. Capital Structure

i. The Project is expected to be financed on the basis of an 80:20 Debt to Equity Ratio. In case the lender(s) require additional equity contribution from the Sponsors, the Company may request additional equity at a later stage Tariff Determination. Currently, the capital structure assumes 100% foreign debt however, the split of loans between local and foreign shall be finalized prior to financial close.

Debt	80%	320.622 million USD
Equity	20%	80.155 million USD

e. EPC Cost Breakup

i. The EPC Cost has been calculated based on best possible estimates available at the feasibility stage design. These EPC Cost numbers shall be finalized based on finalization of the EPC contract for the Project. Once finalized at the EPC Stage the EPC cost will only be adjusted during construction as per the standard escalation allowed by NEPRA. In addition, changes in tunneling cost, if attributable to change in rock-type only, would also be allowed subject to verification by an independent engineer.

f. Non-EPC Costs

i. Customs Duty: Customs duty, import tax and Sindh Infrastructure Cess are calculated at an aggregate rate of 6.05% on import of plant and equipment. A provision of USD 3.277 million has been made in the Project Cost based on the current estimated import cost of electrical and mechanical works. These amounts have been calculated as per the existing tax rates and is adjustable for the tax rate changes as well as changes in prices of equipment at time of finalization of the EPC.

ii. Non-EPC Costs: following Non-EPC costs have been assumed in Tariff:

- Insurance During Construction has been assumed in line with NEPRA benchmark.
- Company Expenses and Administration: These include costs related to the feasibility & other engineering studies and advisory costs typically incurred in the development of projects including financial advisor, legal advisor, tax & corporate advisor, insurance advisor and costs related environmental study.
- Independent Engineer / Reopener Verifier: This relates to costs to be incurred for an independent engineer to be appointed jointly by the Company and the power purchaser to verify the changes in the tunnel rock type (if any) encountered during construction and any related Project Cost adjustments. Independent Engineer would witness the commissioning of the Project at COD.
- Tender Documents and Construction Supervision Costs: These include costs from preparation of tender documents to finalization of EPC Contract for International Competitive Bidding (ICB). Supervision costs include costs for monitoring, approval and reporting of the EPC Contractor until COD.

iii. Lender's Financing Fee & Charges: These charges include lenders' arrangement fees, legal fees, technical advisor fee, insurance advisor fee, monitoring fees, travel costs and other charges and have been estimated according to SRO 763(1)2018 Sub-clause 8(3) whereby such fees have been capped at 2.0% of the total debt. However, given that foreign lenders would be involved, it is proposed that such fees be payable based on actual stated in the lenders' term sheets.

iv. Interest during construction (IDC): Interest during construction has been calculated based on pro-rata debt to equity disbursement in the ratio 80:20 and an interest rate of [3-months LIBOR] plus a spread of [4.60]%. IDC will be adjusted at COD based on actual disbursements and interest rates prevalent during the construction period.

v. Concession Period: A concession period of 50 years has been used as allowed under Power Policy 2002. The 50 year concession period is still a conservative call as it safely matches with the life of hydro power plant power generating equipment (60 – 80 years). Also, in a number of regions (including Scandanavia / Switzerland and Turkey) the concession period extends well beyond 60 years for hydropower projects due to the nominal cost of operation in the extended periods

(Source:https://www.aquila-capital.de/fileadmin/user_upload/PDF_Files_Company-Information/Real-Assets/Hydro_Whitepaper_EN.pdf)

g. Proposed Tariff Components:

i. Water Use Charges: This amount is payable to the Government of Khyber Pakhtunkhwa based on actual energy dispatched to the grid and has been assumed at 0.425 PK/kWh. However, since the rate is expected to change on the demand of provincial government it is proposed that any revised rate and indexation mechanism, if any, will be payable if and when applicable.

ii. O&M Costs: Annual O&M costs would comprise of Fixed O&M costs of USD 7.455 million per annum only. 80% of the component shall be foreign and indexed to changes in US CPI whereas the other 20% (local) of the component shall be indexed to changes in Local CPI.

iii. Insurance during Operation: Insurance costs during operations have been assumed as 1% of the total EPC cost.

iv. Return on Equity: Return on Equity during and after construction has been calculated at 17% for hydropower projects as per Policy. The Project will be implemented on Build, Own, Operate and Transfer (BOOT) basis and will be handed over to KPK government at the end of 50 years.

v. Debt Servicing: The table in Annexure II provide a summary of the debt servicing component which mainly comprises repayment of the principle portion of the debt and payment of interest thereon. The following assumptions have been made in calculating this component:

- Amount of Debt: USD [320.622] million 100% Foreign. However, the split of loans between local and foreign shall be finalized prior to financial close.
- Tenor 13 years including [54] months of construction period.
- Interest Rates: [LIBOR] + 4.60%.
- Repayment: [52] installments starting from COD.
- Drawdown Schedule:

Year	Period [(Quarterly)]	Percentage
1	1	6.25%
	2	6.25%
	3	6.25%
	4	6.25%
2	5	5%
	6	5%
	7	5%
	8	5%
3	9	5%
	10	5%
	11	5%
	12	5%
4	13	5%
	14	5%
	15	5%
	16	5%
5	17	7.5%
	18	7.5%
TOTAL		**100%**

SAPPHIRE HYDRO LIMITED

- The Project drawdown schedule and related IDC is based on preliminary assumptions. This will be adjusted at EPC Stage and COD on account of actual variation in interest on the basis of actual drawdown for the period during construction.

- No taxes or duties have been assumed on the repayment of the loans or interest thereon and would be requested to be pass through wherever applicable.

SAPPHIRE HYDRO LIMITED

8. HYDROLOGICAL RISK

a. The tariff structure and methodology assumes that hydrological risk shall be borne by the power purchaser as per policy and in case of non-availability of water flow, capacity payments will be made to the Company.

9. TARIFF INDEXATIONS

(i). Indexations and Escalations

NEPRA is requested to allow indexation for the various Reference Generation Tariff components in the following manner.

Component of Tariff	Indexation
Water Usage Charges	As per Government Policy / Water Use Agreement
Fixed O&M	Pakistan CPI for Local Component USD & US CPI for Foreign Component
Insurance	PKR/USD
Return of Equity	PKR/USD
Debt Servicing (Interest)	[3 month] LIBOR

(ii). Adjustments at COD

NEPRA is requested to allow the adjustments to the Reference Generation Tarif at the time of true up at COD. It is submitted that the total project cost be adjusted at COD for the following:

(a) Cost of Debt — For the purpose of this Petition it has been assumed that debt shall be secured through foreign financing sources (LIBOR based). It is requested that adjustment of debt be allowed at the time of financial close as per actual borrowing composition i.e. LIBOR/KIBOR /EURIBOR as the case may be;

(b) Return on Equity during Construction based on the actual draw downs;

(c) US$ / PKR exchange rate variations during the construction period;

(d) all local Duties and Taxes paid or withheld;

(e) arrangement, commitment, and other fees charged by the Lenders of the Project

(f) Interest during Construction for allowed increase in Project Cost, change in interest base rate (LIBOR/KIBOR/EURIBOR), variation in loan & equity drawdowns

(g) adjustment due to escalation in cost of civil works including costs associated with cement, labour, and fuel at EPC Stage;

(h) adjustments due to unforeseen rock categories encountered during excavation along with adjustments due to escalation in units rates due to escalation in input costs at EPC Stage

(i) adjustment of costs associated with changes in BOQ based on the detailed design and firm prices of each unit at EPC stage

(j) adjustment due to costs associated with resettlement of habitants of the area affected by the construction of the Project

10. GENERAL ASSUMPTIONS

a. The proposed tariff being submitted is a levelized tariff US cents [8.1015] (or Rs. [8.4823]) for a 50-year term.

b. Annual Plant Factor is 52.29%
   - Installed Capacity 152.12 MW
   - Auxiliary Consumption 1.521 MW
   - Contract Capacity 150.6 MW

c. Construction period of [54] months has been requested.

d. Hydrology risk to be borne by Power Purchaser.

e. Water usage charges of PKR 0.425 Rs./KWh payable to GoKPK. Any increase in the rate in future shall be applicable to project tariff as well.

f. Debt: Equity ratio is assumed to be 80%.

g. Debt repayment period of 13 years with grace period of [4.5] years.

h. Exchange rate is assumed @ PKR [104.7] per USD as per feasibility study

i. All corporate taxes will be treated as pass-through items.

j. No withholding tax on supply of plant and equipment is assumed.

k. The customs duties, taxes and cess are estimated numbers. As per NEPRA's previous tariff rulings, adjustment will be allowed in accordance with the actual expenses incurred in this behalf.

l. No taxes or duties (including stamp duties) have been assumed on the execution of the financing documents, loan repayment, interest repayment, agency fee, commitment fee, upfront fee and fuel purchase or transportation.

m. The tariff table shall be updated at COD in order to reflect the tariff according to prevailing CPI, WPI, KIBOR, LIBOR and exchange rate (PKR/USD).

n. Indexations allowed as the Mechanism for Determination of Tariff for Hydropower Projects of the Authority as may be applicable from time to time.

o. The Power Purchaser will be responsible for procuring, financing, constructing, operating and maintenance of the interconnection on the Power Purchaser side, Metering System as defined in the PPA and the Power Purchaser transmission facilities at Project site.

p. Any non-project specific benefit/concession/incentives given to any other IPP/projects will also be given to the Company i.e. treating all IPPs equally.

q. Any additional costs incurred to cater for any modifications or additions required by the Power Purchaser will form part of the Project cost at the EPC Stage.

r. Tariff at EPC Stage and on COD shall reflect the actual land acquisition and resettlement costs incurred by the Company for the purpose.

SAPPHIRE HYDRO LIMITED

s. No hedging cost has been assumed for exchange rate fluctuations during construction.

t. No provision for the payment of Workers Welfare Fund and Workers Profit Participation has been made in the tariff. In case, the Company has to pay any such fund, that will be treated as pass through item in the Power Purchase Agreement.

u. Debt service reserves, maintenance reserves are not included in tariff calculations. If required by the lenders, these will be adjusted accordingly in the tariff.

v. Any change in applicable accounting standards which impact revenues, costs and equity IRR shall be reflected in tariff accordingly.

11. APPROVAL SOUGHT

a) The petitioner hereby requests NEPRA to award the tariff to the petitioner with the following reliefs/determinations:

i. The Project Cost and related arrangements stated in this Petition be allowed to the Petitioner;

ii. The Reference Generation Tariff set forth in the Petition together with the individual tariff components and the Debt Schedule be allowed to the Petitioner;

iii. The indexations for inflation, foreign exchange fluctuation and interest rate be allowed to be applied to the Reference Generation Tariff components throughout the tariff control period, and such indexation be allowed on quarter/semiannual basis;

iv. The Reference Generation Tariff be adjusted for true up at the Commercial Operations Date based on the actual Project Costs and the underlying assumptions, in particular the General Assumptions and the Indexations and Adjustments as set forth in this Petition;

v. Without prejudice to the generality of item (5), the tariff award may specifically refer to and allow the pass through of all taxes, duties, levies and other public sector payments not included in the Reference Generation Tariff but which are incurred or required to be incurred by the Petitioner during the tariff control period;

vi. The Return on Equity (including during construction) be allowed on Internal Rate of Return basis throughout the tariff control period; and

vii. The energy generated prior to COD be allowed to be sold to the Power Purchaser on payment of O&M Cost and Water Use Charges (if applicable).

Sapphire Hydro Limited

Through

Shahid Abdullah, Chief Executive Officer

SAPPHIRE HYDRO LIMITED

Annexure A: Proposed 50 Year Tariff

Period	Water Usage Charge	Total EPP	Fixed O&M (Local)	Fixed O&M (Foreign)	Insurance	ROE	Loan Repayment	Interest Charges	Total CPP	CPP @ 52.29% Rs./kWh	Tariff Rs./kWh	Tariff US¢/kWh
1	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	1.3841	1.3638	**5.0648**	9.6859	10.1109	**9.6570**
2	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	1.4614	1.2865	**5.0648**	9.6859	10.1109	**9.6570**
3	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	1.5430	1.2049	**5.0648**	9.6859	10.1109	**9.6570**
4	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	1.6291	1.1188	**5.0648**	9.6859	10.1109	**9.6570**
5	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	1.7201	1.0278	**5.0648**	9.6859	10.1109	**9.6570**
6	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	1.8161	0.9318	**5.0648**	9.6859	10.1109	**9.6570**
7	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	1.9175	0.8304	**5.0648**	9.6859	10.1109	**9.6570**
8	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	2.0245	0.7233	**5.0648**	9.6859	10.1109	**9.6570**
9	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	2.1376	0.6103	**5.0648**	9.6859	10.1109	**9.6570**
10	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	2.2569	0.4910	**5.0648**	9.6859	10.1109	**9.6570**
11	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	2.3829	0.3650	**5.0648**	9.6859	10.1109	**9.6570**
12	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	2.5160	0.2319	**5.0648**	9.6859	10.1109	**9.6570**
13	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716	2.6564	0.0914	**5.0648**	9.6859	10.1109	**9.6570**
14	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
15	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
16	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
17	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
18	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
19	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
20	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
21	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
22	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
23	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
24	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
25	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
26	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
27	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
28	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
29	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
30	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.4716			**2.3169**	4.4308	4.8558	**4.6379**
31	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
32	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
33	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
34	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
35	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
36	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
37	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
38	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
39	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
40	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
41	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
42	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
43	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
44	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
45	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
46	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
47	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
48	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
49	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
50	0.4250	**0.4250**	0.1183	0.4733	0.2536				**0.8453**	1.6165	2.0415	**1.9498**
Levelized Tariff												
Y: 01-50	0.4250	**0.4250**	0.1183	0.4733	0.2536	1.3992	1.3054	0.6633	**4.2132**	8.0573	8.4823	**8.1015**

SAPPHIRE HYDRO LIMITED

Annexure B: Debt Repayment Schedule

YEAR	PERIOD	OPENING	INTEREST	PRINCIPAL	TOTAL	CLOSING	INTEREST	REPAYMENT	TOTAL
		USD					Rs./KWh		
1	1	320,622,130	4,384,508	4,271,558	8,656,065	316,350,573			
	2	316,350,573	4,326,094	4,329,971	8,656,065	312,020,602			
	3	312,020,602	4,266,882	4,389,183	8,656,065	307,631,418			
	4	307,631,418	4,206,860	4,449,205	8,656,065	303,182,213	1.3638	1.3841	2.7479
2	1	303,182,213	4,146,017	4,510,048	8,656,065	298,672,164			
	2	298,672,164	4,084,342	4,571,723	8,656,065	294,100,441			
	3	294,100,441	4,021,824	4,634,242	8,656,065	289,466,199			
	4	289,466,199	3,958,450	4,697,615	8,656,065	284,768,584	1.2865	1.4614	2.7479
3	1	284,768,584	3,894,210	4,761,855	8,656,065	280,006,730			
	2	280,006,730	3,829,092	4,826,973	8,656,065	275,179,757			
	3	275,179,757	3,763,083	4,892,982	8,656,065	270,286,775			
	4	270,286,775	3,696,172	4,959,893	8,656,065	265,326,881	1.2049	1.5430	2.7479
4	1	265,326,881	3,628,345	5,027,720	8,656,065	260,299,161			
	2	260,299,161	3,559,591	5,096,474	8,656,065	255,202,687			
	3	255,202,687	3,489,897	5,166,168	8,656,065	250,036,519			
	4	250,036,519	3,419,249	5,236,816	8,656,065	244,799,703	1.1188	1.6291	2.7479
5	1	244,799,703	3,347,636	5,308,429	8,656,065	239,491,274			
	2	239,491,274	3,275,043	5,381,022	8,656,065	234,110,252			
	3	234,110,252	3,201,458	5,454,607	8,656,065	228,655,644			
	4	228,655,644	3,126,866	5,529,199	8,656,065	223,126,445	1.0278	1.7201	2.7479
6	1	223,126,445	3,051,254	5,604,811	8,656,065	217,521,634			
	2	217,521,634	2,974,608	5,681,457	8,656,065	211,840,177			
	3	211,840,177	2,896,914	5,759,151	8,656,065	206,081,027			
	4	206,081,027	2,818,158	5,837,907	8,656,065	200,243,120	0.9318	1.8161	2.7479
7	1	200,243,120	2,738,325	5,917,740	8,656,065	194,325,379			
	2	194,325,379	2,657,400	5,998,666	8,656,065	188,326,713			
	3	188,326,713	2,575,368	6,080,697	8,656,065	182,246,016			
	4	182,246,016	2,492,214	6,163,851	8,656,065	176,082,165	0.8304	1.9175	2.7479
8	1	176,082,165	2,407,924	6,248,142	8,656,065	169,834,024			
	2	169,834,024	2,322,480	6,333,585	8,656,065	163,500,439			
	3	163,500,439	2,235,869	6,420,197	8,656,065	157,080,242			
	4	157,080,242	2,148,072	6,507,993	8,656,065	150,572,249	0.7233	2.0245	2.7479
9	1	150,572,249	2,059,076	6,596,990	8,656,065	143,975,260			
	2	143,975,260	1,968,862	6,687,203	8,656,065	137,288,056			
	3	137,288,056	1,877,414	6,778,651	8,656,065	130,509,405			
	4	130,509,405	1,784,716	6,871,349	8,656,065	123,638,056	0.6103	2.1376	2.7479
10	1	123,638,056	1,690,750	6,965,315	8,656,065	116,672,742			
	2	116,672,742	1,595,500	7,060,565	8,656,065	109,612,176			
	3	109,612,176	1,498,947	7,157,119	8,656,065	102,455,058			
	4	102,455,058	1,401,073	7,254,992	8,656,065	95,200,065	0.4910	2.2569	2.7479
11	1	95,200,065	1,301,861	7,354,204	8,656,065	87,845,861			
	2	87,845,861	1,201,292	7,454,773	8,656,065	80,391,088			
	3	80,391,088	1,099,348	7,556,717	8,656,065	72,834,371			
	4	72,834,371	996,010	7,660,055	8,656,065	65,174,316	0.3650	2.3829	2.7479
12	1	65,174,316	891,259	7,764,806	8,656,065	57,409,510			
	2	57,409,510	785,075	7,870,990	8,656,065	49,538,520			
	3	49,538,520	677,439	7,978,626	8,656,065	41,559,894			
	4	41,559,894	568,332	8,087,734	8,656,065	33,472,160	0.2319	2.5160	2.7479
13	1	33,472,160	457,732	8,198,333	8,656,065	25,273,827			
	2	25,273,827	345,620	8,310,446	8,656,065	16,963,381			
	3	16,963,381	231,974	8,424,091	8,656,065	8,539,290			
	4	8,539,290	116,775	8,539,290	8,656,065	0	0.0914	2.6564	2.7479

SAPPHIRE HYDRO LIMITED