AZAD PATTAN HYDRO POWER PROJECT

EPC STAGE TARIFF PROPOSAL

BEFORE

CENTRAL POWER PURCHASE AGENCY GUARANTEE LIMITED

23 JUNE 2017

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ABBREVIATIONS AND DEFINITIONS

AJ&K	Azad Jammu & Kashmir
BOOT	Build, Own, Operate & Transfer
CGGC International	China Gezhouba International Engineering Co. Limited
CGGC Overseas	China Gezhouba Group Overseas Investment Company Limited
COD	Commercial Operation Date
Company	Azad Pattan Power (Private) Limited
(CPPA-G)	Central Power Purchasing Agency (Guarantee) Limited
CPI	Consumer Price Index
EPA	Environmental Protection Agency
EPC	Engineering, Procurement & Construction
EPCC	EPC Contract
EPP	Energy Purchase Price
EIA	Environmental Impact Assessment
ESIA	Environmental & Social Impact Assessment
FS	Feasibility Study
GOP	Government of Pakistan
GWh	Giga Watt hour (1,000,000 kilowatt hours)
HPP	Hydro Power Project
IDC	Interest During Construction
IPP	Independent Power Producer
IRR	Internal Rate of Return
KIBOR	Karachi Interbank Offered Rate
KWh	Kilowatt hour
LIBOR	London Interbank Offer Rate
LOI	Letter of Interest
LOS	Letter of Support
E&M	Electrical and Mechanical
MW	Mega Watt (1,000 kilowatts)
NEPRA	National Electric Power Regulatory Authority

NTDC	National Transmission and Dispatch Company
OE	Owner's Engineer
O&M	Operation & Maintenance
Ordinance	Companies Ordinance 1984
POE	Panel of Experts
Power Policy 2002	The GOP's Policy for Power Generation, 2002
Power Purchaser	Central Power Purchasing Agency Guarantee Limited
Project	Azad Pattan Hydropower Project
PKR/Rupees/Rs.	Pak Rupees, Legal Tender of Pakistan
PPA	Power Purchase Agreement
PPIB	Private Power & Infrastructure Board
RFP	Request for Proposal
ROE	Return on Equity
ROEDC	Return on Equity during Construction
USD/US$	United States Dollars; legal tender of USA
US CPI	United States Consumer Price Index
WAPDA	Pakistan Water & Power Development Authority
WPI	Wholesale Price Index
WUC	Water Use Charges

TABLE OF CONTENTS

1. GROUNDS FOR PROPOSAL

1.1 BASIS

This tariff proposal (the "**Tariff Proposal**") is being put up to Central Power Purchasing Agency (Guarantee) Limited (**CPPA-G**) for onward submission to National Electric Power Regulatory Authority ("**NEPRA**" or "**Authority**") under the National Electric Power Regulatory Authority (Import of Electric Power) Regulations, 2017 and other applicable laws.

The Authority is exclusively responsible for regulating the provision of electric power services in Pakistan; and, amongst others, the Authority holds the power to determine tariff, rates, charges and other terms and conditions for supply of electric power services by the generation, transmission and distribution companies and recommend to the Federal Government for notification.

1.2 TARIFF PROCESS AND HISTORY

The World Bank Discussion Paper No. 420 "*Financing of Private Hydropower Projects*" states that "Hydropower faces additional difficulties caused by the site-specific nature of projects, high construction risk and long construction periods, their capital-intensive nature with a high proportion of local costs, unpredictable output subject to river flows and broader water management constraints, complex concession process to achieve transparency in the award and pricing of output, and environmental sensitivities"

NEPRA has wisely recognized these issues and taken a very good initiative by developing the "*NEPRA mechanism for determination of tariff for hydropower projects*" ("**NEPRA Mechanism**") which goes a long way in addressing the hydropower specific problems and is an industry leader in the world. This has positively impacted incoming foreign investment in hydropower sector and has helped develop Pakistan's significant untapped hydel resources.

As hydropower projects require significant long- term investment, developers need an early indication of tariff to justify and continue their investment. Accordingly, the NEPRA Mechanism has specified three stages for tariff determination at (a) feasibility stage; (b) EPC Stage; and (c) COD stage. NEPRA recognizes, through the NEPRA Mechanism that "*construction costs of hydel projects cannot be firmed till construction completion date, NEPRA will treat such uncertainties by allowing adjustments to different project components and corresponding costs limited to Tariff Reopeners and other adjustments as allowed by NEPRA*".

The Azad Pattan hydropower project (the "**Project**") is being developed under the Policy for Power Generation Projects 2002 issued by the Government of Pakistan. As required under the Letter of Interest (**LOI**) issued by the GOP, the bankable feasibility study for the Project

was carried out, completed by URS/Scott Wilson and duly approved by the Panel of experts appointed by Private Power Infrastructure Board (**PPIB**) in December 2011.

The Company filed Feasibility Stage Tariff Proposal ("**FS Tariff Proposal**") with National Transmission and Despatch Company (**NTDC**) on 11 April 2012 which was reviewed and submitted onwards by NTDC on 23rd October 2012 for approval by NEPRA. After due process, NEPRA issued the FS Tariff Decision on 30th January 2014 vide its letter number NEPRA/PAR-107/1056 ("**FS Tariff Original Decision**"), in which the Project construction time was reduced from six (6) years to four (4) years and period costs were reduced on a pro-rata basis to reflect the reduced construction time of four (4) years.

As completion of the Project in the reduced construction time was not technically possible the Company filed a Review Petition on 23rd April 2014. Finally, NEPRA in its review determination issued vide letter number NEPRA/PAR-107/12818 dated 16th October 2014 (the "**FS Tariff Review Decision**") reinstated the original six (6) years construction period as proposed in the approved Feasibility Study and FS Tariff Proposal.

However, notwithstanding, restoration of the construction period to six (6) years, the previously reduced period costs were not restored but it was stated that such costs would be adjusted/re-determined at the time of EPC stage tariff approval process based on contracts, firm budgets and estimates.

Letter of Support (**LOS**) was issued by the GOP on 30 June 2016 which requires the Company to finalize the EPC Contract and submit EPC Stage Tariff Proposal to CPPA-G within eighteen (18) months from the date of issuance of the LOS and to achieve financial closing no later than twenty-four (24) months from the issuance of the LOS.

1.3 PROPOSERS DETAILS

Azad Pattan Power (Pvt) Limited,
6th Floor EOBI House, Mauve Area,
G10/4 Islamabad, Pakistan.

Authorized Representative:
Mr. Zhang Zhanfeng - Chief Executive Officer

1.4 SPONSORS DETAILS

The Letter of Support issued by AJK Council through PPIB on 30 June 2016 has nominated Power Universal Co. Ltd. wholly owned and controlled by China Gezhouba Overseas Investment Company Limited and China Gezhouba Group International Engineering Company Limited as the Main Sponsor and Initial Shareholder with obligation to hold the required shares during the lock in period.

In compliance with the LOS, NEPRA Import of Electric Power Regulations, 2017, NEPRA Mechanism and other applicable laws, the Company is pleased to submit this Tariff Proposal together with all relevant information and details and requests the Authority to approve and determine, for the Azad Pattan Hydropower Project, the following:

a) The EPC stage Reference Tariff for the thirty (30) year PPA term commencing at COD;

b) Provisions for the One-time Adjustment of Project Cost at COD, Pass-Through items, Indexation of the Reference Tariff components and Reference Tariff Assumptions for the thirty (30) year term commencing at COD.

We respectfully request the Authority to process this Tariff Proposal at the earliest to enable the Company to achieve financial closing, construction start and completion of this Project of National importance as soon as possible. The Company's management is at the Authority's disposal to provide any further information, clarification or explanation that may be required during the tariff review and determination process.

2. EXECUTIVE SUMMARY

2.1. The Levelized Tariff of PKR 8.5083/kWh (US ¢ 8.1032/kWh) sought by the Company is fully consistent with other similar hydropower projects internationally and in Pakistan.

2.2. This tariff is a result of a competitive EPC price which was achieved through a transparent and robust bidding process and firm estimations of Non-EPC cost components in a diligent and pragmatic manner.

2.3. The Azad Pattan HPP cost of US$ 2.16 million (2017) per MW is fully consistent with similar hydropower projects internationally and with NEPRA determined cost of adjacent Karot HPP at US$ 2.36 million (2016) per MW and Suki Kinari at US$ 1.96 million (2014) per MW. Costs of large hydropower projects are discussed in IFC study "Hydroelectric Power" which reports that cost of hydropower projects internationally range from US$ 1 million to US$ 3.5 million per MW. With the lower range reflecting projects built on existing dams or hydropower facilities, whereas the higher range reflects green field projects at remote sites. Please refer to:

http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/hydroelectric_power_a_guide_for_developers_and_investors

2.4. The Project EPC Cost of US$ 1.45 million per MW is competitive with similar hydropower projects both domestically and in Pakistan, especially, the immediately downstream Karot HPP which has an EPC Cost of US$ 1.78 per MW.

2.5. The EPC Stage Tariff Proposal is being filed by the Company with CPPA G, the Power Purchaser, for onward processing and approval from NEPRA under regulations "National Electric Power Regulatory Authority (Import of Electric Power) Regulations, 2017".

2.6. The Company is submitting the EPC Stage Tariff Proposal with the below given Project Cost, Reference Tariff and other details for approval of the Authority:

Item	US$ million
Project Cost	
EPC Cost	1,013.281
Non-EPC Costs	284.883
Project Cost before IDC	*1,298.164*
Interest During Construction (IDC)	218.004
Total Project Cost	*1,516.168*
Total Cost (US$)/MW	2.16 million
EPC Cost (US$)/MW	1.45 million

Technical	
Francis vertical turbines	4 units
Rated Plant Capacity (generator terminal)	700.7 MW
Auxiliary consumption	7.0 MW
Net Plant Capacity (metering point)	693.7 MW
Annual Generation (net of aux./colony)	3258 GWh
Design Discharge	1260 m^3/sec
Gross Head	64.24 m
Plant Factor	53.1%
Construction Period	69 months

Financing	
Project Funding (Debt: Equity)	75:25
Debt amount (75%)	US$ 1137.13 million
Equity amount (25%)	US$ 379.04 million
Total project cost (finance raised)	US$ 1516.17 million
Door-to-door debt tenure	18 years
Debt Pricing- Foreign (net of 10% tax)	LIBOR 1.30% + 4.2% spread
Debt repayment (after COD)	24 equal semi-annual instalments

Operations Cost US$ million (average)	*Year 1-12*	*Year 13-30*
O&M	31.22	31.22
Water Use Charge	13.19	13.19
Insurance	10.13	10.13
Sub-Total	*54.54*	*54.54*
Financial Cost US$ million (average)		
Debt servicing	135.09	-
Equity servicing	106.20	110.26
Sinosure	5.43	-
Sub-Total	*246.72*	*110.26*
Grand Total	**301.26**	**164.80**
Generation (GWh)	3258	3258
Tariff (average) US cents per kWh	**9.2466**	**5.0581**
Tariff		
Levelized Tariff (US Cents/kWh)	*8.1032*	
Reference Exchange Rate	US$ 1= PKR 105	
Levelized Tariff (PKR/kWh)	*8.5083*	
Others		
Concession Period	30 years (commencing at COD)	
Concession type	Build Own Operate Transfer (BOOT)	
Power Purchaser	CPPA G	

2.7. The Company engaged independent engineering consultant, a consortium of Montgomery, Watson, Harza (MWH) International USA and Peter Rae Hydro Consulting Limited (PRHC), Canada, to render services as EPC tendering and evaluation consultant. On 8 September 2016, an invitation to participate in international competitive bidding (ICB) was published in two (2) national and three (3) international publications. Seven (7) potential contractors, shown below, expressed their interest and procured the bid documents.

1. China International Water and Electric Corporation
2. Ghulam Rasool and Company (Pvt.) Limited (in JV with an Italian contractor)
3. Descon Engineering Limited (in JV with a Chinese contractor)
4. Anhui Shuian Construction Group Corporation Limited (China)
5. China Gezhouba Group Company Limited (China)
6. General Electric International Operations Pakistan (Pvt.) Limited (USA)
7. Sambu Construction Co. Limited (Korea)

On the final bid submission date, comprehensive bids were received from two (2) bidders Anhui Shuian Construction Group Corporation Limited and China Gezhouba Group Company Limited. The digital version of both the Bids was posted to a secure network location for access by the independent consultants bid evaluation team and the bids received by the deadline date were opened at the formal bid opening in Gananoque, Ontario, Canada at 10:00 Central Standard Time on November 29, 2016.

Evaluation was carried out, amongst others, on basis of design experience and capability, construction planning and methods, construction schedule, financial resources, reasonableness of pricing, conditions of contract and financial proposals.

After full compliance and due process within the framework of the approved Feasibility Study, on 14 December 2016, the lowest evaluated and most advantageous bid, was determined by the independent consultant to be the JV of China Gezhouba Group Company Limited and China Gezhouba Group International Engineering Co. Ltd. Accordingly, award was made to the successful bidding consortium on 27 December 2016, followed by execution of EPC Contract on 11 June 2017.

2.8. This Tariff Proposal, for Azad Pattan HPP, is presented to solicit approval of the EPC Stage tariff in accordance with the NEPRA Mechanism which will allow the Project to conclude its financing, start construction and achieve commercial operations.

3. THE PROJECT

The Azad Pattan Power (Pvt) Ltd, (the "**Company**"), is a private limited company incorporated in Pakistan on 27th July 2006, under the Companies Ordinance 1984. The Company is a special purpose corporate vehicle established to finance, construct, own, operate and transfer to Government, Azad Pattan Hydropower Project, located, on the Jhelum River, in Azad Jammu and Kashmir (**AJK**).

The Project is an initiative of the Government of Pakistan being developed in the private sector under the Policy for Power Generation 2002, to add generating capacity by developing untapped indigenous hydropower resources through involvement of the private sector.

The 700.7 MW Project will go some way in mitigating the power shortages, add much needed hydropower capacity and contribute to the energy security of the country, adding much needed capacity to the inventory of hydropower projects in the Country and generating 3,258 GWh some 3 % of the Country's annual generation. The Project was identified and highlighted by Montreal Engineering Company, Canada (Monenco) under *"Inventory and Ranking Study of Major Hydroelectric Projects"* carried out for WAPDA during 1981 to 1984 with a generation capacity of 89 MW and a plant factor of 98%. During 1992 to 1994, the Project was studied by GTZ-WAPDA and the capacity was revised to 222 MW with a plant factor of 89%.

PPIB offered the Project, located at 33° 44' N, 73° 38' E about 7 km upstream from existing Azad Pattan bridge in Muslimabad village, district Sudhnoti, AJ&K, for development, to the private sector and under this initiative a Letter of Interest for Project capacity of 222MW was awarded to the Company in May 2007. The Project site, approximately ninety (90) kilometers from Islamabad, is accessible through all-weather metal road in a 1½ hour journey.

The general landform within the locality of the Project site can be described as Ridge-and Trough Plains. The site is characterized by a narrow valley with steep side slopes, relatively low population density and located near thrust faults in a seismically active area.

The Company engaged URS Scott Wilson, USA/UK, leading International engineering consultants, to carry out the bankable Feasibility Study. During this process, the full potential of the site was exploited and the Project capacity was optimized and increased to 640 MW with a plant factor of 54.85%.

After thorough due diligence and review, the Feasibility Study was duly approved by the Panel of Experts appointed by PPIB on 20th December 2011.

During EPC contract negotiations and finalization, the EPC Contractor confirmed Project installed capacity of 700.7MW (FS 640 MW), at generator terminal and net capacity of 693.7 MW (FS 637.7 MW), at metering point, with net annual energy yield of 3,258 GWh (FS 3,064 GWh).

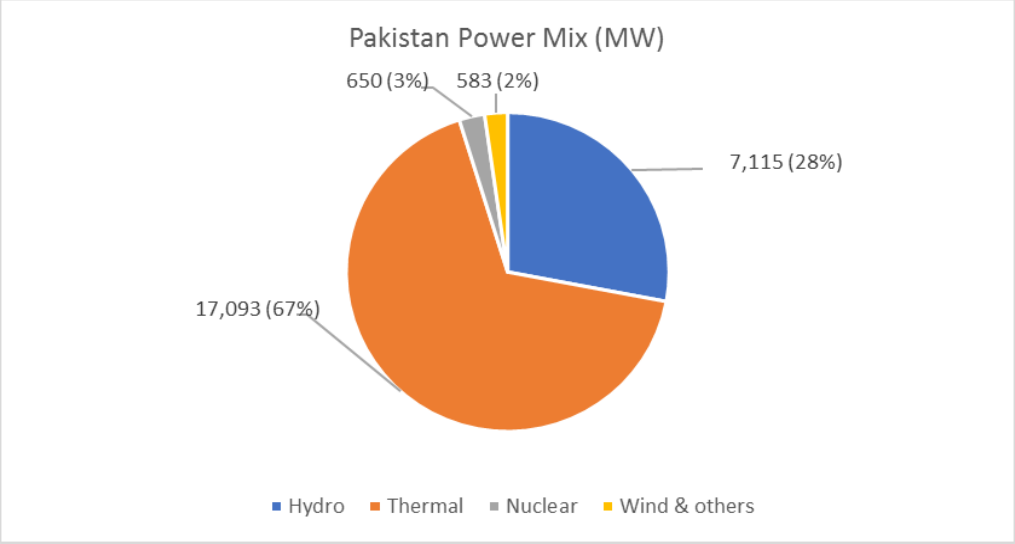
The Project is one of the hydropower schemes in the River Jhelum cascade comprising (from upstream to downstream) Chakoti Hattian, Kohala, Mahl, Azad Pattan, and Karot with a total potential of some 3,685 MW.

The reservoir capacity and generation potential of each project in the cascade is influenced by the head and tail water levels determined by the Cascade Study commissioned by the PPIB.

The Project should be viewed from the context of the Pakistan Power Sector, especially hydropower. Hydropower contributes about 16% of global electricity and Pakistan is fortunate that it has 28% hydropower in its energy mix; however, it still has significant unexploited hydel resources of which only about 12% have been developed and made operational.

Hydropower projects offer extremely low operating costs and very long operating lifespans of 40-50 years that can often be extended to 100 years with some rehabilitation.

The declining trend in hydropower over the years has been caused by rapidly growing thermal capacity compared with hydropower growth and hydropower, which was at one time one-third, now accounts for only 28 % of the total installed capacity of Pakistan as shown below:

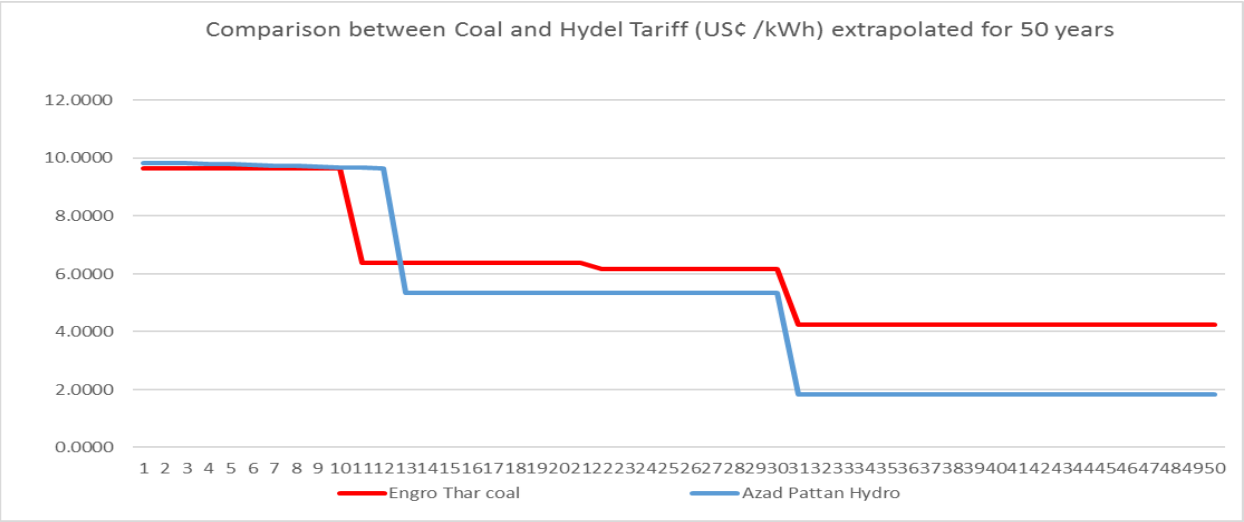


Hydropower provides energy security, generates low-cost electricity, has the longest life of any generation technology and considering the vast untapped hydropower resources in Pakistan, it is vital to continue fast-track development of the unexploited hydropower

resources to mitigate the serious power shortages and blackouts that are being experienced at present.

Hydropower and Thar coal are both indigenous resources but the main difference is potential pollution and adverse health impacts of coal generation. Further, thermal generation relies on fuel and the variable cost cannot sink below the fuel and O&M cost; compared with hydropower which falls to the O&M cost after servicing of debt and equity.

The Project will go some way in addressing the energy crisis in Pakistan and will add to the inventory of low cost, environmentally friendly hydropower generation projects. The low generating cost of hydropower can be seen from the following tariff comparison:



Note: *Cost for major rehabilitation to enhance life to 50 years has not been considered nor has annual cost inflation both of which affect coal more than hydropower generation.*

The LOS issued by PPIB on 30th June 2016 duly nominated Gezhouba Group companies as the Main Sponsor and the Initial Shareholder and requires the Company to achieve financial close on or before 30th June 2018.

Considerable progress has been achieved, in short span of time after issuance of LOS, including, completion of EPC bidding, award and signing of EPC Contract, receipt of preliminary indicative term sheets from banks, land demarcation/inventory for land acquisition duly vetted by the local land authorities and commencement of land acquisition process.

The Project salient features include:

a) A 90m roller compacted concrete (RCC) dam, at the site on the River Jhelum, was selected to create the generating head and provide a reservoir suitable for hourly regulation of the flow, for energy dispatch. The River Jhelum is prone to intense floods and the dam crest

substantially comprises spillways to pass the probable maximum flood of 35,650 m^3 at the site.

b) Classified as a run-of-the river "pondage" scheme with small live storage of 14.3 m^3 between full supply level and low supply level which provides an option for four (4) hours daily peaking and regulating plant operations to maximize use of available hydrology.

c) The low- level outlets, in the dam, are provided for flow release during power station outages, sediment sluicing during flood events, and for flushing of sediment when the reservoir is drawn down.

d) An intake structure with associated tunnels will be provided in the left river bank.

e) The powerhouse will be located underground on the left side of the dam, comprising four (4) Francis type turbine-generator units with associated equipment and systems. The power station and its associated waterways will be designed for a rated plant flow rate of 1260 m^3/s.

f) Diversion tunnels and cofferdams will be required during construction of the dam, intake structure, and power station.

g) The tail water will be controlled by the reservoir level of the Karot hydropower project, which is located downstream.

h) The Project generation of 3258 GWh is based on robust and reliable hydrological record spanning forty (40) years based on authentic, established, **daily hydrological flow data** providing a reliable basis for estimation of annual hydrology, of the River Jhelum, a major eastern tributary of the River Indus Basin with a catchment area of about 6,000 square kilometers of alluvial lands in the Kashmir Valley and glaciers located in the north of the catchment. This provides a high degree of assurance to the power purchaser as reliable estimate of the project energy generation and the capacity.

Project Layout

4. EPC SELECTION AND TENDERING PROCESS

As customary in limited recourse project financing, the project construction will be on a "fixed-price, time-certain" arrangement through a turnkey Engineering, Procurement and Construction ("**EPC**") Contract. In this regard, the Company initiated the standard process for international competitive bidding and selection of EPC Contractor in line with the best international practice and appointed renowned engineering firms to serve the role of independent consultant to monitor and supervise the bidding, evaluation and award process.

A Letter of Award was issued to the lowest evaluated and most advantageous bid and the EPC Contracts were duly signed with the nominated bidder. A summary of the timelines in the overall EPC tendering and selection process are shown below:

Description	Date
Advertisement to procure the Tender Documents	08 Sept 2016
Last date for purchase of Tender Documents	20 Sept 2016
Pre-Bid meeting with the potential bidders	01 Oct 2016
Last date for submission of Bids	29 Nov 2016
Evaluation of Bids	30 Nov - 14 Dec 2016
Contract negotiations	15 Dec - 26 Dec 2016
Issuance of Letter of Award	27 Dec 2016
Signing of EPC Contract	11 June 2017

4.1 PREPARATION OF TENDER DOCUMENTS

The Company engaged independent engineering consultant, a consortium of Montgomery, Watson, Harza (MWH) International USA and Peter Rae Hydro Consulting Limited (PRHC), Canada, to render services as EPC tendering and evaluation consultant ("**EPC Tendering and Evaluation Consultant**"), to ensure a professional, competitive and transparent bidding process and selection.

A brief profile of EPC Tendering and Evaluation Consultant is provided below:

- MWH, with a water engineering pedigree of over a hundred years, is a world-renowned hydropower consulting firm providing comprehensive dam and hydropower engineering services to public and private clients around the world for over a century. MWH has provided services on over 4,000 dams and more than 70,000 MW of hydropower projects that are now in operation. MWH and its predecessor Harza has been engaged for engineering services for most of the major hydropower projects in Pakistan including

1000 MW Mangla HPP, 3478 Tarbela HPP, 1450 MW Ghazi Barotha, 969 MW Neelum-Jhelum HPP, 84 MW New Bong Escape HPP, 102 MW Gulpur HPP and 4500 MW Diamer Bhasha Dam.

- PRHC. Principal, Mr. Peter Rae started his career with Harza, USA some 35 years ago. The firm provides expert consulting, planning, design, project management, and project development services for hydropower and water resources projects. Some recent projects include 180 MW Adjaristsqali Hydro Project in Georgia, 280 MW Nam Theun Hinboun expansion project in Laos, owner's engineer for initial stages of the 84 MW New Bong Escape HPP in Pakistan, and technical advisory to other projects internationally. He also provided technical services to the GOP in the mediation process on Baghlihar HPP.

The services procured from the EPC Tendering and Evaluation Consultant comprised, amongst others, preparation of EPC tender documents ("**Tender Documents**"), technical support during the EPC tender process, independent evaluation of EPC bids ("**Bids**"), leading negotiation with the lowest evaluated EPC Contractor and drafting/finalization of the bankable EPC Contract.

The Tender Documents prepared by the EPC Tendering and Evaluation Consultant are compliant with International standards including the World Bank and included various relevant sections as follows:

a) Bidding Procedures;
b) Conditions of EPC Contract and Contract Forms;
c) Project Requirements; and
d) Reference Information, which included Feasibility Study and geological investigation reports of the Project.

4.2 ADVERTISEMENT AND ISSUANCE OF TENDER DOCUMENTS

Bids were solicited from eligible EPC contractors on 8th September 2016 through advertisement(s) in two local and three leading international publications inviting eligible interested parties to participate in the International Competitive Bidding ("**ICB**") process for the selection of EPC Contractor for the Project.

Seven (7) companies expressed their interest to participate in the bidding process for selection of EPC contractor for the Project and purchased tender documents:

1. China International Water and Electric Corporation
2. Ghulam Rasool and Company (Pvt.) Limited
3. Descon Engineering Limited
4. Anhui Shuian Construction Group Corporation Limited

5. China Gezhouba Group Company Limited
6. General Electric International Operations Pakistan (Pvt.) Limited
7. Sambu Construction Co. Limited

A pre-bid meeting, presided by the EPC Tendering and Evaluation Consultant, was held on 01 October 2016 at 1400 hours (Pakistan Time) and was attended by prospective bidders. The EPC Tendering and Evaluation Consultant gave a detailed presentation, overview of the Tender Documents, discussed Project specific requirements, scope of work and responded to specific questions raised by the participants.

4.3 EVALUATION CRITERIA

The criteria defined in the Tender Documents for evaluation of Bids (the "**Evaluation Criteria**") comprises of three stages:

i. Eligibility/Pre-qualification of bidders,
ii. Technical evaluation, and
iii. Commercial evaluation.

Bidders qualifying the Pre-Qualifications Requirements would be eligible for Technical evaluation which more specifically was focused on the technical aspects of the Project itself. A bidder satisfying the minimum technical evaluation score of 50 out of 100 became eligible for the Commercial evaluation. The scores of Technical and Commercial evaluations were then consolidated by applying 50% weightage to each; and thereafter Bids were ranked according to their consolidated score to arrive at the lowest evaluated and most advantageous bid.

i. Pre-Qualification Requirements: This included the following key elements (extracts of the bidding documents) that would affect the ability of the contractors to complete the Project on time and within the contract price:

Factor	Criteria / Requirement
Nationality	A Bidder shall be deemed to have the nationality of a country if the Bidder is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country.
Bank Ineligibility	Not having been declared ineligible in the past three years by the World Bank's Anti-Corruption Guidelines, and in accordance with its prevailing sanctions policies and procedures as set forth in the WBG's Sanctions Framework.

Factor	Criteria / Requirement
Ineligibility based on a UN resolution or Employer's country law	Not having been excluded as a result of the Employer's country laws or official regulations, the Employer's country prohibits commercial relations with that country; or by an act of compliance with UN Security Council resolution taken under Chapter VII of the Charter of the United Nations.
History of non-performing contracts	Non-performance of a contract did not occur within the last ten (10) years prior to the deadline for application submission, based on all information on fully settled disputes or litigation.
Pending Litigation	Bidder's financial position and prospective long term profitability sound, assuming that all pending litigation will be resolved against the Bidder.
Litigation History	No history of court/arbitral award decisions against the Bidder since 1st January 2005.
Financial Resources	Availability of, financial resources, lines of credit, and other financial means, other than any contractual advance payments to meet: (i) US$ 150,000,000 annual cash-flow; and (ii) overall cash flow requirements for this Contract and its current commitments.
General Experience	Experience in hydropower EPC contracts in the role of contractor, subcontractor, or management contractor for at least the last ten (10) years starting 1st January 2006.
International Experience	Participation as contractor, JV member, management contractor, or subcontractor in at least one contract within the last 10 years outside of the contractor's country of origin.
Specific Experience	Participation as contractor, JV member, management contractor, or subcontractor, in at least two (2) contracts within the last ten (10) years, each with a value of at least USD 300,000,000, that have been successfully and substantially completed and that are similar to the proposed Plant and Installation Services.
Specific Experience	Experience in the following key activities: • RCC Dam design and construction • Underground powerhouse design and construction • Surface powerhouse design and construction • Hydropower tunnels • Francis turbines with capacity more than 100 MW

ii. Technical Evaluation Criteria

Criterion	Evaluation	Score
Contractor experience and capability	• Experience with similar hydropower projects • Past performance with similar projects in Pakistan • Availability of necessary construction plant and equipment • Qualified and experienced key construction and management personnel • Continuity and availability of personnel for the Project	30
Design experience and capability	• Proven design experience with hydropower projects of comparable size • Example of design procedure and methodology used for an EPC hydropower project in Pakistan • Applicable experience of key design staff to be assigned to the Project.	10
Construction Planning and Methods	• Well thought out project management plan structure which reflects the needs of the Contract. • Clear and well defined procedures and interfaces. • Technically simple yet effective and proven technology. • Selection of construction equipment. • Methods for underground works and rate of construction. • RCC construction method and rate of construction. • Sequencing and interfacing of civil works with equipment installations. • Project site infrastructure plan. • Contingency planning.	20
Electrical and mechanical equipment	• Plant layout and suitability of equipment proposed. • Description of major E&M equipment items and systems • Procurement, delivery and transportation plan • Training and O&M service plan	15
Construction Schedule	• Realistic planning of facilities and sequencing of works. • Sufficient detail provided for review of schedule. • Realistic scheduling consistent with proposed construction methods. • Identification of risk and allocation of float for risk areas. • Proposed means of mitigating delays in the event that there are unforeseen events that impact on progress. • Opportunities for early completion of the Project and technical feasibility.	20

Criterion	Evaluation	Score
	• Capabilities for mitigation and management of risks to prevent delays and cost increases.	
Health, Safety and Environment	• Demonstrates a corporate commitment to safety, proven solutions, safe working practices and culture, training and supervision. • Draft site-specific health and safety plan • Acceptable safety statistics for at least one other hydropower project in Pakistan. • Demonstrates an understanding of the key environmental risks	5
Total Technical Score		**100**

iii. Commercial / Financial Evaluation Criteria:

Criterion	Evaluation	Score
Bid Price	The Bid Price will be evaluated to determine the Evaluated Bid Score using the criteria: - Adjustments for arithmetic errors, discounts offered, any quantifiable nonmaterial nonconformities - Differences in the scheduled completion for the COD will be valued. - The value of the cash flow proposed by the Bidder will be determined by discounting payments to present value as of the Contract Commencement Date.	60
Reasonableness of pricing	The pricing structure will be reviewed. Higher marks will be awarded to Bidders with consistent pricing.	5
Financial Situation	Higher marks for stronger balance sheet, larger financial resources, and larger annual turnover.	10
Conditions of Contract	Lower marks will be awarded for exceptions to the Conditions of Contract.	15
Financing Proposals	Higher marks for Bidders offering financing proposals/letters of interest from financial institutions.	10
Total Commercial Score		**100**

4.4 RECEIPT AND OPENING OF BIDS

All seven (7) companies that expressed their interest, purchased tender documents but only two (2) Bids were received at the Company's office (Islamabad) on 29 November 2016 by 1500 hours', the closing date and time.

The digital version of both the Bids was posted to a secure network location for access by the Bid Evaluation Team (as defined hereunder in sub section 4.5). The Bid Evaluation Team opened the bids received by the deadline date at the formal bid opening in Gananoque, Ontario, Canada at 10:00 Central Standard Time on November 29, 2016. At the opening of the Bids, the following assessment was made:

- The two companies that submitted Bids were (i) Anhui Shuian Construction Group Corporation Ltd. ("**ASCG**"); and (ii) JV of China Gezhouba Group Company Limited and China Gezhouba Group International Engineering Co. Ltd. ("**CGGC**").
- Each of Bids submitted complied with the requirement to supply qualifications, technical information, and commercial information in accordance with the Tender Documents.
- A financial summary and key terms of the Bids received were immediately recorded as follows:

Name	**Anhui Shuian Construction Group Corporation Ltd**	**JV of China Gezhouba Group Company Limited & China Gezhouba International**
Bid Price (PKR and US$)	US$ 698,160,065.50	US$ 722,371,083.06
	PKR 33,278,851,784.79	PKR 33,030,867,950.00
Total Bid Price (US$)	US$ 1,015,624,571.64	US$1,037,469,940.70
Bid Security	Provided	Provided
US$ 1=PKR	104.827	104.827

4.5 BID EVALUATION AND RESULTS

The bid evaluation was independently performed by the Bid Evaluation Team of the EPC Tendering Consultant (JV of MWH and PRHC), in accordance with the Evaluation Criteria, without any involvement of the Company. The Bid Evaluation Team, nominated by the EPC Tendering and Evaluation Consultant, comprised experts in EPC project management, construction management, hydropower design, electrical and mechanical equipment procurement, financial analysis, and construction contracts ("**Bid Evaluation Team**").

Bidders were assessed on a "*pass-fail*" basis for each requirement under the Pre-Qualification Requirements stated above, and both the bidders were considered qualified for the more detailed Technical and Commercial evaluation.

Various clarifications were obtained from the bidders during the tender evaluation process. Following thorough and detailed evaluation of the Bids, the Technical and Commercial evaluation scores assigned by the Bid Evaluation Team are as follows:

Description	**Weightage**	**Evaluation Scores**	
		ASCG	**CGGC**
Technical Score	50%	53	79
Commercial Score	50%	71	90
Total Combined Score	100%	62	84
Ranking		**2nd**	**1st**

The Bid received from CGGC met all the qualifications, technical and commercial requirements stipulated in the Tender Documents, and was nominated as the lowest evaluated and most advantageous bid based on achieving the highest combined ranking primarily due, but not limited to, the following factors:

1. CGGC has substantial relevant experience with major hydropower projects including large hydropower projects in Pakistan, in comparison with ASCG.

2. ASCG proposed 2192 days for achievement of COD while CGGC provided a schedule that demonstrates that COD can be achieved within 2009 days from the Notice to Proceed (NTP) under the EPC Contract.

3. The schedule proposed by CGGC was realistic and consistent with the proposed construction methods statement, site infrastructure, and equipment.

4. The evaluated price of CGGC was ranked first among the two Bids evaluated, after adjustment for differences in time for completion and construction cash flows.

5. Several deviations from Conditions of the EPC Contract were requested by ASCG, which would result in a substantive reduction in the level of security available to the Company affecting the cost of project financing.

4.6 NEGOTIATIONS AND AWARD OF EPC CONTRACT

With the conclusion of evaluation and recommendation of the lowest evaluated and most advantageous bid by the EPC Tendering and Evaluation Consultant, detailed negotiations and

meetings were held in Beijing for finalization of the Project Requirements and the EPC Contract.

After successful negotiations with EPC Contractor, the Company issued Letter of Award and signed the EPC Contract based on FIDIC Conditions of Contracts for EPC/turnkey projects with a capacity of 700.7 MW (at generator terminal) and 693.7 MW (at the metering point), after auxiliary and colony load, yielding a net energy of 3258 GWh per annum based on a net head loss of 2.5m and design flow of 1260 m^3/s for a negotiated construction period of 69 months.

5. PROJECT COST AND FINANCING

5.1 PROJECT COST

The total Project cost of US$ 1,516.168 million (the "**Project Cost**") is based on contracts, firm quotations, reliable estimates, thorough analysis and understanding of the factors that affect the development and construction of a hydropower projects.

A summary of the Project Cost at EPC stage is given below:

Cost Item	**(US$ million)**
EPC Cost	
- Onshore Works	672.223
- Offshore Works	341.058
Sub-total EPC Cost	**1,013.281**
Non-EPC Cost	
Financing/Lenders Fees	41.978
Insurance on Debt / Sinosure	35.426
Legal Costs	13.677
Engineering Supervision	63.753
Land Acquisition & Resettlement	12.028
Insurance During Construction	25.332
O&M Mobilization	6.436
Customs Duties	17.053
Project Development Cost	56.252
Environment	12.948
Sub-total - Non-EPC Cost	**284.883**
Project Base Cost before IDC	**1,298.164**
Interest During Construction (IDC)	218.004
Total Project Cost	**1,516.168**
Levelized Tariff (US cents/KWh)	**8.1032**
Levelized Tariff (PKR/KWh)	**8.5083**
Cost per MW (US$ 1516.168 ÷ 700.7 MW)	**2.16**

It is noteworthy that, resulting from a robust and competitive bidding process, the Project Cost has remained substantially the same as proposed some five (5) years ago in the Feasibility Study approved in December 2011.

The Reference exchange rate of US$ 1 = PKR 105 (the "**Reference Exchange Rate**") has been assumed for conversion of local cost into US dollars in the Project Cost. Further details of each sub-head of the Project Cost is provided in the following sections of the Tariff Proposal, along with full explanation and rationale.

5.2 FINANCING PLAN & TERMS

In the Feasibility Study in 2011, the Company proposed that the Project be financed in a Debt to Equity ratio of 75:25, with 80% foreign debt and 20% local debt. However as 100% foreign debt is available and indicated at competitive rates, the Company is choosing this option. The Company nonetheless retains the right to opt for an element of local financing with the requisite tariff adjustment, to reflect this at COD stage, if this is considered necessary, in the interest of the Project and availed during implementation of the Project.

The Project Cost will be financed in the following pattern during development and construction phase of the Project:

Description	**Percentage**	**(US$ million)**
Total Project Cost	100.00%	1516.168
Equity	25.00%	379.042
Debt (foreign)	75.00%	1,137.126
Pre – Financial Close	**Equity Drawdown**	**Debt Drawdown**
Year 1	1.00%	0.00%
Year 2	1.68%	0.00%
Year 3	5.32%	0.00%
Post – Financial Close		
Year 1	14.50%	22.50%
Year 2	19.00%	19.00%
Year 3	15.00%	15.00%
Year 4	13.50%	13.50%
Year 5	12.50%	12.50%
Year 6	17.50%	17.50%
Total	**100.00%**	**100.00%**

The financing terms of foreign debt are as follows:

Debt Financing Terms	
Total Debt	US$ 1,137,125,636
Grace Period	6 years

Repayment Period	12 years
Door-to door tenure	18 years
Interest Rate – Foreign financing (p.a.)	LIBOR + 4.20%
Withholding tax on Foreign Debt Interest	10.00%
Reference LIBOR	1.30%
Repayment frequency	Semi Annual

The Equity contributions from the sponsors during the thirty (30) months prior to construction start will attract Special ROE (17% IRR) in addition to 17% return on equity contributions made during construction (ROEDC) and both will be subject to adjustment for US$/PKR exchange rate variation. Redemption of Equity will start after repayment of debt i.e. twelve (12) years after COD.

5.3 COMPARISON WITH FEASIBILITY STAGE COSTS

A summary and analysis is presented below to critically compare the EPC Stage Project Cost with the approved Feasibility Study costs. The Feasibility Study was completed and approved in 2011 and was based on price levels in 2009-2010; the EPC tendering process was completed in December 2016. Despite the long intervening period of over six (6) years, the EPC cost per MW has reduced from US$ 1.54 /MW to US$ 1.45 /MW while the total Project Cost has only increased by under 5% in the six (6) to seven (7) year period.

The EPC cost which is the most critical of all the project costs has been maintained or reduced due to the robust EPC bidding process which has been independently and professionally managed and has resulted in competitive price levels.

Cost item	**EPC Stage 2017**	**FS Stage 2011**	**Reason for difference**
Installed capacity (MW)	700.7	640	
EPC Cost	***US$ Million***		
Onshore Works	672.22	492.21	
Offshore Works	341.06	495.12	
Total EPC Cost	**1,013.28**	**987.33**	Reduced from US$ 1.54/MW to US$ 1.45/MW
Non-EPC Cost	***US$ Million***		
Financing/Lenders Fees	41.97	37.96	Based on current lenders Term sheets.
Sinosure Fee on Debt	35.43	-	Not known or considered at time of FS
Letter of credit	-	17.32	Position and claim reserved if required.
Legal Costs	13.68	-	Based on current conditions and firm budgets
Engineering Supervision	63.75	22.44	Based on revised estimates
Land Acquisition	12.03	16.45	As per NEPRA FS Tariff approval
Insurance During Construction	25.33	29.92	Reduced based on indicative quotes and estimates

Cost item	EPC Stage 2017	FS Stage 2011	Reason for difference
O&M Mobilization	6.44	7.67	Reduced based on revised estimates and price levels
Customs Duties	17.05	28.97	Reduced due to lower E&M prices
Project Development Cost	56.25	36.68	Based on current conditions and firm budgets
Environment	12.95	0.47	Higher due to increased scope
Sub-total Non-EPC Cost	**284.88**	**197.89**	
Project Cost before IDC	**1,298.16**	**1,185.22**	
Interest During Construction	218.00	261.516	Reduced due to shorter construction period and actual debt terms
Total Project Cost	**1,516.17**	**1,446.74**	Under 5% cost increase from FS cost in 2010/11

5.4 COMPARISON WITH OTHER HYDROPOWER PROJECTS

Though each hydropower project is unique in terms of site, layout and technology it is instructive to compare costs of projects with similar capacities and output. The Azad Pattan HPP can be seen to be the most beneficial to the Power Purchaser of all similar hydropower projects, as shown by the base indicators given below:

Hydropower Project Cost Comparison			
	Azad Pattan	*Karot*	*Suki Kinari*
Gross Installed Capacity (MW)	700.7	720	870.25
Net Generation per annum (GWh)	3258	3174	3050
Plant Factor	53.6%	50.3%	40.0%
Levelized Tariff (US c/KWh)	**8.10**	**7.61**	**8.81**
Construction Period (months)	**69**	**60**	**72**
EPC Cost (US$ million)	1,013	1,278	1,301
Non-EPC Cost (US$ million)	285	224	198
Total Base Project Cost (US$ million)	1,298	1,502	1,499
Interest during Construction (US$ million)	218	196	208
Project cost (US$ million)	**1,516**	**1,698**	**1,707**
Base Indicators:			
Effective Date	May, 2017	Feb, 2016	July, 2013
Total Project Cost (US$ million)/MW	2.16	2.36	1.96
Total EPC Cost (US$ million)/MW	1.45	1.78	1.49
Total EPC Cost (US$ million)/GWh/PA	0.31	0.40	0.43

It is noteworthy that a low plant factor means a relatively larger plant size which should translate into greater generation to be economically viable, however, **the Project has the highest plant factor and also the highest generation of all three compared projects which indicates optimum economic sizing of the plant**.

It is also worth mentioning here that the three (3) projects above are based on different cost assumptions for computation of their tariff. As an illustration, equalization of these assumptions and adjustment for the debt/equity ratio, interest rate, construction period, annual energy, special ROE and Water Use Charge as shown below results in an equalized tariff US ¢ 6.98 (levelized) for Azad Pattan compared with US ¢ 7.61 (levelized) for Karot.

	Azad Pattan	***Karot***
Debt to Equity ratio	75/25	80/20
Interest rate (p.a.)	6.11%	5.68%
Construction Period (months)	69	60
Annual Energy (GWh)	3258	3174
Special ROE (30 months prior to construction start)	Taken	Not Taken
Water Use Charge (Rs/kWh)	0.425	0.150

6. EPC PRICE AND CONTRACT

The EPC Contractor would execute the 'Works' in accordance with the Project Requirements of the EPC Contract, on a lump sum fixed price – time certain basis with the following re-openers in the EPC Price at Commercial Operations

A. Changes in prices of cement, steel, labor and fuel;
B. Variation in rock type/classification in tunneling works;
C. Withholding taxes on onshore works in excess of seven percent (7%); and
D. Any sales tax paid by Contractor on invoices issued under EPC Contract in Pakistan/AJ&K.

Break-up of EPC Price agreed under the EPC Contract are as follows:

Description	US$	PKR	Total in US$
Onshore Works			
Civil	325,051,167	31,649,851,568	626,975,782
Hydraulic Steel Structures	11,606,199	189,241,661	13,411,475
Electrical & Mechanical works	31,835,636	-	31,835,636
Sub-total Onshore (A)	**368,493,002**	**31,839,093,229**	**672,222,892**
Offshore Works			
Hydraulic Steel Structures	83,478,525	-	83,478,525
Electrical & Mechanical	257,579,233	-	257,579,233
Sub-total Offshore (B)	**341,057,758**	**-**	**341,057,758**
EPC Price claimed under proposal (A+B)	**709,550,760**	**31,839,093,229**	**1,013,280,650**
Add: Contingencies (Note -1)	-	5,241,350,000	50,000,000
Add: Provisional sum for relocation of roads and bridges (Note -2)	12,820,323	1,191,774,721	24,189,290
EPC Price as per Contract	**722,371,083**	**38,272,217,950**	**1,087,469,940**

The exchange rate used for conversion is PKR 104.827 per US$ as applicable 29 days prior to the EPC bid submission.

Note-1: Contingencies for EPC Re-Openers allowed under NEPRA Mechanism

The EPC Price includes an estimated amount of PKR 5,241,350,000, computed on basis of relevant indices, to compensate the Contractor for (i) changes in cost of civil works on account of cement, steel, fuel and labour, and (ii) changes in cost of tunnelling works due to geological conditions; which shall be allowed and paid to the Contractor in accordance with the

approved NEPRA mechanism and base data provided at Annexure – A attached herewith, with the Company being allowed commensurate adjustment in tariff at COD therefore not included in the EPC cost as claimed in this EPC stage Tariff Proposal. This inclusion in EPC Contract is necessary to allow for financing of this cost and seamless, uninterrupted construction activities.

Note-2: Provisional Sum for relocation of roads/bridges

In the FS Tariff Proposal, the Company proposed an estimated cost US$ 16.449 million which included (a) land, (b) resettlement related to persons on Project site and (c) resettlement of public infrastructure including roads, bridges and electricity poles. This cost was reduced by NEPRA to US$ 12.028 million in the FS Original Tariff Decision, covering the same sub-heads.

The EPC Contractor has estimated and quoted a cost of US$ 12,820,323 and PKR 1,191,774,721 equating to US$ 24,189,290 for resettlement works such as relocation of existing roads, bridges and public infrastructure based on the parameters provided in the Feasibility Study. The actual cost for such resettlement works may vary depending on final design/technical requirements demanded by the Relevant Authorities, under the Government direction, during construction, which is not in control of the EPC Contractor or the Company.

Such cost, by its nature, is shown as the public infrastructure part of 'Land and Resettlement Cost' line-item in the Feasibility Study and the FS Original Tariff Decision and accordingly has been taken in this Tariff proposal, which shall be adjusted at actual cost at COD stage tariff determination and allowed as a reopener under the NEPRA Mechanism.

The Contingency and Provisional Sum reflect items that would be allowed as One-Time Adjustments/cost re-openers under the NEPRA Mechanism under as described and explained above are necessary to be identified and recognized and included in the project cost as (i) changes in cost of civil works on account of cement, steel, fuel and labour; (ii) changes in cost of tunnelling works due to geological conditions; (iii) cost of land; (iv) resettlement related to persons on Project site; (v) resettlement on account of cost of public infrastructure including roads, bridges and electricity poles. This cost has been recognized as it is a requirement of the financiers to get this cost financed.

7. NON-EPC COST

7.1 Non-EPC Cost - Summary

Non-EPC Cost	US$ Million
Financing/Lenders Fees	41.978
Insurance on Debt / Sinosure	35.426
Legal Costs	13.677
Engineering Supervision	63.753
Land Acquisition & Resettlement	12.028
Insurance During Construction	25.332
O&M Mobilization	6.436
Customs Duties	17.053
Project Development Cost	56.252
Environment	12.948
Sub-total - Non-EPC Cost	**284.883**

7.2 LIMITED RECOURSE PROJECT FINANCE

Large infrastructure projects worldwide, requiring massive investment are mostly financing through non-recourse or limited recourse finance. This means that the lenders have no tangible security when they start lending except the “yet to be constructed” project and future project cash flows. The Lenders risk in such financing is very high and accordingly they are very stringent and diligent for every aspect of the project including construction arrangements, security package, agreements, contracts and quality of advisors, consultants and engineering experts.

Due to above stated reasons in typical limited-recourse project finance (structured and offered by all International Lenders) the lending group requires the Company to engage and pay for a set of advisors and agents who carry out a detailed and comprehensive due diligence for the lenders; and the finance facility is approved and made available to the Company only after full satisfaction of the lenders.

In addition, the lenders rely on a reputable and highly experienced construction contractor to minimize construction risk and completion risk together with a variety of other engineers, advisors and consultants which the Company is obligated to hire until project completion.

The Lenders also require that the project cost is fully provisioned i.e. that all aspects of cost have been considered and fully provided for to avoid delays and potential project failure should there be a shortage of funds or if the construction or other activities are mismanaged

which would be highly damaging for all stakeholders but most of all to the financiers who have no security and rely on project completion for their returns out of the project revenues. Thus the identified costs of advisors, consultants and lenders fees is an inevitable cost of non-recourse or limited recourse project finance.

The related costs which are lender driven are cost of legal advisers and agents for the Lenders and the Company; together with technical, environmental advisers including the Owners Engineer and engineering and supervision cost. The cost estimates provided herein should be viewed from this perspective.

7.3 FINANCING/LENDERS FEES

The financing fee / cost and its percentage to the total debt amount is shown below:

Description	US$
Management Fee	12,634,729
Commitment Fee	29,343,090
Total Claimed	**41,977,819**
Percentage of Total Debt	**3.69%**

The total amount claimed is greater than the cap of 3% allowed by NEPRA but due to valid reasons based on full justification and documentary evidence as explained below:

- The financiers require that the fees be received without any deduction of tax. If any taxes arise the Company is obliged to "*gross*" up the amount payable to financiers for the withholding tax (currently (10%)) pursuant to prevailing tax laws and bilateral tax treaties between Governments of Pakistan and China, and bear the impact of such withholding tax to ensure that the payment to be received after tax deduction is the same as what would have been received had there been no tax. This impact was not included in the cap of 3% threshold earlier determined by NEPRA and, accordingly, this is part of the exceedance over the cap which is fully justified as it is a condition of the finance.
- Longer loan tenures, risk perception of the Country and the Project (long construction period and construction/completion risk) has a direct bearing on the Lenders fee. Thus, a cap of 3% disregarding the various other project and specific technological factors is not maintainable.
- The Lenders fee, like all other fees and costs, are also subject to inflationary pressure over time and are likely to increase from one year to the next like all other costs thus a fixed cap over time is unrealistic.

Seventy five percent (75%) of the total Project Cost shall be financed through debt raised from Chinese financiers. Financiers would charge standard fee as per their internal policies and

regulation which generally comprises of working fees, front end fees, arrangement fees, monitoring fee and commitment fees.

The Company has estimated a cost of US$ 41,977,819 under this head based on the Indicative Term Sheet provided by the financiers for Azad Pattan HPP. This includes Commitment Fees of 0.8% p.a. on the undrawn loan amount during the loan availability period and one-time Management Fee of 1% of the total loan amount.

Both Commitment and Management Fees, computed at the rates specified above, have been grossed up for 10% withholding tax.

The Company requests the Authority to approve US$ 41,977,819 for the Lender's Fee subject to adjustment at COD based on:

(i) Final rates for Commitment and Management Fee agreed with the foreign lenders under financing documents, including similar fees of local lenders (if any);

(ii) NEPRA approved debt amount at COD;

(iii) Any change in withholding tax rate of 10% assumed on such payments to the financiers; and

(iv) Variation in US$/PKR parity.

7.4 INSURANCE ON DEBT ("SINOSURE" FEE)

Sinosure Fee was not covered in the Company's FS Tariff Proposal nor in NEPRA's Original Decision as the financing arrangements were not in place at that time. This fee refers to the foreign debt which is wholly (100%) being raised from Chinese banks.

Sinosure is China's official export credit insurance agency, offering export credit insurance and overseas investment insurance. To be specific, Sinosure is the unique insurance entity in China that can provide Overseas Investment Insurance to the overseas investing projects by Chinese firms/entities. The policy of Overseas Investment Insurance covers equity and debt portion of the Project and is intended to provide the insured party with risk guarantee if they suffer economic losses because of war, currency exchange ban or breach of contract by the government or related counterparts in countries where the insured have made investments. It is designed to facilitate foreign investment and to support and promote Chinese companies and their financial counterparts to raise project finance.

According to the requirement of the Chinese government, it is mandatory for state-owned enterprises such as CGGC, undertaking overseas investments to acquire overseas investment insurance from Sinosure. Similarly, loans arranged from Chinese Banks would need to be covered under the Sinosure insurance. Based on the latest precedent of Karot HPP, and

general discussion with insurance agency, the Company has assumed a rate of 0.6% per annum (net of taxes) for Sinosure Fee on debt.

Given that payments made to Sinosure are currently subject to twenty percent (20%) withholding tax, the rate has been grossed up giving an effective tax-adjusted fee of 0.75%

Sinosure Premium on Debt (p.a.) during construction period:

Premium for No. *i* policy year = Insured Amount for No. *i* policy year x Insurance Rate + committed amount for No. *i* policy year x Commitment Rate

Where:

- Insured Amount = (Principal already Disbursed + Interests Incurred) + (Principal to Disbursed during No. *i* policy year + Interests to be Incurred during No. *i* policy year);
- *i* = the number of policy year;
- Committed Amount = Total Principal- (Principal already Disbursed + Principal to be Disbursed during No. *i* policy year)
- Insurance Rate = 0.6% per annum and Commitment rate = Insurance Rate x 15%

Sinosure Premium on Debt (p.a.) during operation period:

Premium for No. *i* policy year= Insured Amount for No. *i* policy year x Insurance Rate

Where:

- *i* = the number of policy year; and
- Insured Amount= Outstanding Principal at the beginning of No. *i* policy year + Interests incurred during No. *i* policy year.

(0.6% ÷ (100% – 20%). The fee charged shall apply for loan drawdown during the construction period as well as the loan repayment period during the operations of the Project, in accordance with the formula.

As a matter of Policy, the Authority has not allowed Sinosure coverage for equity and accordingly, the Company has not requested for this in its Tariff Proposal.

The Authority is requested to allow an amount of US$ 35,425,859 as Sinosure Fee on the Debt amount of US$ 1,137.13 million, subject to adjustments at COD based on:

1. NEPRA approved Foreign Debt and its related IDC at COD;
2. Actual drawdown of Foreign Debt during construction period;
3. Any change in Sinosure premium rate beyond 0.6% per annum;
4. Any variation in interest margin beyond 4.2% per annum;
5. Any change in withholding tax rate of 20% assumed on Sinosure payments; and
6. Variation in US$/PKR parity.

7.5 LEGAL COST

An amount of US$ 13.678 million has been estimated as Legal cost which is under 1% of the total Project Cost, and is considered a a reasonable and realistic estimate fully comparable with similar costs allowed by NEPRA in the recent determinations.

The detailed breakup of cost claimed is as follows:

Cost Head	US$	Role
Lenders Legal Adviser	6,075,600	International and local legal counsel is responsible for advising and guiding the Lenders on the structure of the concession documents, security documents and finance documents including drafting and negotiation of finance documents. Additionally, the Company has also appointed its internal legal counsel, RIAA Barker Gillette to advice on structuring of transaction, negotiations of concession and finance documents and advisory on tariff and other legal matters. The AJ&K legal advisors shall also be appointed to deal and opine on the AJ&K related matters.
Owner Legal Adviser	3,546,985	
Legal Advisor-AJK	420,694	
Security Trustee	682,949	As required under English Law, a Security Trustee will be appointed who shall sign and be the custodian of all security documents and application of "enforcement action" on behalf of the Lenders.
Inter-creditor Agent	1,537,941	Inter-creditor Agent will be appointed by the Lenders to interface with the Company on behalf of the Lenders as customary in non-recourse project financing.
Sinosure Legal Adviser	1,413,441	As explained above, the Sinosure agency will be involved for insuring the debt financed by Chinese lenders. This cost relates to Sinosure adviser for performance of risk assessment of the Project, Project country and issuance of Sinosure policy.
Total	**13,677,610**	

These costs are absolutely necessary and vital from a project finance perspective and no finance shall be available to construct the Project without the Company incurring these costs and the Authority is requested to approve US$ 13,677,610 on this account.

7.6 ENGINEERING AND SUPERVISION COST

In the FS Tariff Proposal, the Company requested a cost of US$ 33.19 million including US$ 22.44 million on account of Owners Engineer and US$ 10.75 for miscellaneous technical consultants. The Authority approved US$ 22.44 million for Owners Engineer but reduced the amount requested for miscellaneous technical consultants to US$ 8.532 million in FS Original Tariff Decision.

Engineering and Supervision is an important and critical area contributing to successful and timely implementation of power, especially hydropower projects. Such costs as compared with the FS Stage Tariff Proposal are shown below:

Cost head	FS Tariff Proposal (US$ m)	FS Original Tariff Decision (US$ m)	EPC Stage Tariff Proposal (US$ m)
Owners Engineer	22,440,000	22,440,000	29,529,661
Other Technical Consultants	10,750,000	8,532,000	34,223,035
Total	**33,190,000**	**30,972,000**	**63,752,696**

A cost of US$ 63.753 million has been estimated by the Company at EPC stage under the following sub-heads:

Description	Amount (US$)
Owner's Engineer	29,529,661
PPA Engineer	1,715,054
Re-opener Verifier	4,802,150
Lender's Technical Engineer	9,532,470
Feasibility and Other studies	3,161,596
Other Engineering Consultants	15,011,765
Total Engineering and Supervision Cost (incl. 16% Sales Tax)	**63,752,696**

1. **Owner Engineer:** The Owner's Engineer role is primarily to carry out design review and optimization, construction monitoring, QA/QC, factory inspections and milestone completion certifications after physical check. The Owner's Engineer ensures that Project is being constructed according to design specifications, PPA requirements, EPC Contract and international prudent practices. To effectively play its role the Owner's Engineer requires strong team of experts and professionals on site (for construction monitoring) and offsite (for design review). The role of the Owners Engineer is vital and critical for EPC type construction arrangements and ensures that the project is timely completed in accordance with the technical specifications and best industry practices.

2. **Lenders' Technical Engineer:** Lenders technical engineers' scope of work includes the due diligence of all technical aspects of the Project including EPC Contracts, Power Purchase Agreement, interconnection study, technical assumptions, environmental issues etc.; technical advisors are engaged and appointed by the Lenders, at the cost of the Company, during construction phase and also during the operations phase until the debt/loan has been repaid as per the financing documents.

3. **Re-opener Verifier and PPA Engineer:** Pursuant to PPA, the Re-Opener Verifier needs to be appointed and deployed at Project site during tunneling works, to substantiate the actual geological conditions encountered and actual resultant cost variations; and an independent engineer is required to be appointed starting from 270 days prior to COD for construction supervision and certification of Commercial Operations on behalf of Power Purchaser.

4. **Feasibility and Technical Studies:** URS Scott Wilson leading International engineering consultants in association with FHC Consulting Engineers, prepared the bankable Feasibility Study which covered feasibility stage design including bills of quantity and cost estimation, geological surveys and investigations. The Feasibility Study was duly vetted and approved by the Panel of Experts on 20 December 2011.

5. **Other Engineering Consultants:** Services of the JV of MWH International, Inc. USA and Peter Rae Hydro Consulting Ltd (PRHC), Canada has been appointed as engineering consultant to deal with various technical matters prior to financial close which includes preparation of EPC tendering documents, evaluation of the EPC tenders, assistance during EPC contract negotiations, selection of electro mechanical supplier, review of load flow study, and any other technical matters. These services will continue until appointment of the Owners Engineer. Furthermore, infrastructure projects including large hydropower require a strong in-house Technical department as a first and foremost requirement for the monitoring, control and oversight of the project during construction period. Therefore, the Company has engaged experienced technical staff for "*over the shoulder*" monitoring of the construction supervision and is also required for managing relationship with Lender's Technical Advisors, PPA Engineer, Power Purchaser and other relevant stakeholders.

It is pertinent to note that level of effort required by Engineer with regards to design reviews is almost similar in all hydropower projects, however, the construction period of the hydropower has a direct bearing on the cost of such service; the greater the construction period, the longer the Engineers stay at Project site for construction monitoring and oversight. Further, the quantum of works involved dictates the number of qualified and relevant experts to be stationed at site at any point in time, during the construction phase.

The Azad Pattan HPP has a construction period of sixty-nine (69) months and a higher level of effort due to the very narrow valley, transportation, and construction constraints. In addition, it is pertinent to note here that through Finance Act 2015, a wide range of services have been brought within the ambit of sales tax, including but not limited to construction services (with certain exceptions), contractual execution of works for annual value exceeding PKR 50 million, management consultancy, engineering and technical consultancy, and business support services. Effective 01 July 2015, such services rendered in Pakistan and/or AJ&K are subject to sales tax at the rate of sixteen percent (16%). This is one of the key reasons for increase in the engineering and supervision costs.

The Company requests for approval of US$ 63.753 million under this cost head for the construction period of 69 months which is very much in line with the tariff determinations of other comparable hydropower projects. For instance, cost of US$ 38.4 million has been allowed by the Authority to Karot HPP for a construction period of 60 months, when adjusted for 16% sales tax and 69 months construction time, works out to be US$ 51.22 million.

Therefore, taking into account inflationary impact, the 16% sales tax, longer construction period and Project complexity with underground powerhouse , the Company's request for US$ 63.753 million under this head is fully justified, evidenced and may be allowed by the Authority.

7.7 LAND ACQUISITION AND RESETTLEMENT COST

In accordance with NEPRA FS Original Tariff Decision US$ 12.028 million was allowed as cost of (a) land (b) resettlement related to persons at site and (c) resettlement related to public infrastructure e.g. roads, bridges, electricity poles etc. subject to the NEPRA stated condition that this cost will be adjusted **at COD** in accordance with the NEPRA Mechanism based on authentic documentary evidence.

Accordingly, at this stage this cost is being made part of the EPC Stage Tariff Proposal and it is further elaborated that the cost at COD, subject to provision of authentic documentary evidence will include:

- Land and Resettlement costs related to acquisition of land required for the Project;
- Costs related to latest updated surveys and preparation of the land inventory completed and in hand to-date;
- Other resettlement costs to be paid to affected people for the acquisition of land, houses and infrastructure within the Project boundary;
- Compensation to be paid to the affected people for loss of livelihood and trees, various obligations related to construction and raising of bridges, relocation of utilities and access tracks and roads;

- Any costs arising from the approved Environmental and Social Impact Assessment Report which the Company is legally required to pay, over and above environmental monitoring related costs claimed separately;
- All types of land including farm land, barren, forest, shrubs farm, trees, fruit trees etc.;
- Replenishment costs under the applicable forest land related laws and regulations;
- Residential structures, commercial structures, livelihood safeguards;
- Relocation/replacement of public infrastructure i.e. roads, bridges and electricity poles;
- Stamp duties and other regulatory costs/fees to be paid, in accordance with the prevailing laws of Pakistan and AJ&K on the execution, registration and similar charges paid on (a) the Land Lease Documents in Pakistan and AJ&K; and (b) Land Security Documents acceptable to the Project Lenders in Pakistan and AJ&K; and
- Actual costs paid by the Company for acquisition of land required for the Project and other resettlement costs in line with the NEPRA Mechanism.

As permitted by NEPRA in the FS Original Tariff Decision, the actual costs with documentary evidence will be claimed by the Company and allowed by the Authority at COD stage tariff decision.

7.8 INSURANCE DURING CONSTRUCTION

The Authority has allowed Insurance during construction of US$ 19.351 million, at FS Original Tariff Decision, which worked out to 2.40% of the approved EPC cost based on the reduced construction period of 48 months.

The insurance cost has a direct relationship with the construction period and as the Authority had reinstated the construction period to 72 months (now 69 months) without reinstating the earlier requested cost in FS Review Tariff Decision.

Further, the insurance market is dynamic and very sensitive to prevailing events accordingly when the insurance is placed over a year from the present time the prevailing conditions and basis for the quote may be different from now. It may be noted that the Authority has allowed 2.5% for Karot HPP with a construction period of five (5) years.

The following insurances are required to be procured during construction phase and largely depends upon different parameters to be set by the Project Lenders e.g. sum insured, deductibles for each insurance head, amount for revenue loss due to delay in start-up and terrorism/third party insurance requirements etc.:

- Construction All Risk Insurance (CAR);
- CAR Delay in Start-up Insurance;
- Terrorism Insurance;

- Marine and Inland Transit Insurance;
- Marine Delay in Start-up Insurance; and
- Comprehensive General/Third Party Liability Insurance.

In addition to the above construction related insurance cover, there will also be generic insurance cover related to staff health and medication and other fixed assets in use of the Project Company's staff and officials. Such insurances form part of estimates for Company's administration cost and are not included in the above total.

The Company has estimated a cost of US$ 25.332 million representing 2.5% of the EPC Price. However, keeping in view the uncertainty about the security and political situation of AJ&K in future, the Company requests an adjustment in the insurance cost during construction phase at actual subject to a maximum cap of 2.75 % of the EPC Price (as adjusted and approved by Authority at COD in accordance with NEPRA Mechanism), subject to presentation by the Company and verification by the Authority of credible documentary evidence.

7.9 O&M MOBILIZATION

The O&M operator is an important stakeholder of the Project and will be responsible for smooth and efficient operations of the plant for many years. Each hydropower plant is unique and has its own peculiar operating conditions and constraints. Early mobilization of the O&M operator and familiarization with the plant during its installation helps him to understand the Project philosophy and to become well equipped with each aspect of the Project before commencement of operations. Moreover, the input of the O&M Contractor during construction phase also ensures smooth testing and taking over of the works from the EPC Contractor in a timely manner.

The Company has envisaged the mobilization of the O&M operator, at least twelve (12) months prior to the Commercial Operations Date; and services during this period would essentially include, amongst other, the operational design review, development of O&M manuals, witnessing of testing and commissioning and operations of the Complex during sectional completion. In its decision of more than a year ago, the Authority has allowed US$ 3.00 million for Karot HPP based on a mobilization of 7-9 months prior to COD. The Company has estimated that the O&M operator would be mobilized 12 months prior to COD and accordingly has claimed a cost of US$ 6,435,613 under this head which is based on firm estimates and indications from potential O&M contractor therefore it is requested that this cost may be allowed based on authentic documentary evidence.

7.10 CUSTOM DUTIES

The relevant taxation statute regarding customs duty on renewable energy power projects requires such projects to pay custom duty at the rate of 5% on the import of Plant and Machinery not manufactured locally.

NEPRA allowed an amount of US$ 28.287 million on account of customs duty in the FS Original Tariff Decision, however, as the E&M cost has reduced after the competitive bidding process the amount has reduced to US$ 17.05 million for payment of 5% custom duties on imported plant and equipment with a cost of US$ 341.06 million.

No other taxes or duties, including but not limited to, sales tax, excise duty or road tax have been assumed to be applicable. It is requested that NEPRA may allow the request cost of US$ 17.05 million subject to the condition that the Company shall be allowed adjustment in the Project Cost at COD under this head to compensate for actual custom duties, taxes, cess or other similar charges paid on import of Plant and Machinery for the Project.

7.11 PROJECT DEVELOPMENT / MANAGEMENT COST

A cost of US$ 10.750 million and US$ 25.930 million (total US$ 36.68 million) was claimed by the Company for Owners advisors/consultants and owners Administration Cost in the FS Stage Tariff Proposal respectively. Against this the Authority approved US$ 8.532 million and US$ 16.955 million (total US$ 25.487 million) respectively in FS Original Tariff Decision for the reduced construction period of four (4) years, which was later on reinstated to six (6) years without any adjustment related to such period cost.

The Company has claimed a total cost of US$ 56.252 million under this head till COD, out of which cost of approximately US$ 7.64 million has already been incurred till March 2017, duly supported by audited financial statements and other credible evidence and documentation. The details are shown below:

Cost Head	**FS Tariff Proposal 72 months (US$ m)**	**Original FS Tariff Decision 48 months (US$ m)**	**EPC Stage Tariff Proposal 69 months (US$ m)**
Owners Administration	25,930,000	16,955,000	29,743,608
Owners Advisers / Consultants	10,750,000	8,532,000	11,908,160
Sub-total	**36,680,000**	**25,487,000**	**41,651,768**
Security Management	-	-	3,000,000
Chinese expats (Note)	-	-	11,600,000
Total	**36,680,000**	**25,487,000**	**56,251,768**

Note: Cost related to Chinese expats was not envisaged at FS stage and as the Project is majority owned by Chinese Sponsors now, this cost is unavoidable.

The break-up of Adviser/Consultant's cost estimated at EPC stage under the following sub-heads:

Description	**Amount (US$)**
Financial Model and Financial Advisory	1,364,706
Insurance Advisers	682,353

Description	Amount (US$)
Audit and Regulatory Fees	998,628
Management Consultancy	4,776,471
Surveys and land consultants	2,523,953
L/Cs and Guarantees	1,562,049
Total Owner's Advisors/Consultants	**11,908,160**

The subject costs mainly consist of the following:

- Cost of Project Advisors i.e. Financial Advisor, Auditors, Tax Advisor, and Insurance Advisors;
- Cost relating to establishment of the Company and maintaining it in good standing;
- Company head office and site office running expenses such as security, acquisition of assets, office rent, house rents, travelling, staff salaries, allowances, and other benefits;
- Cost of Chinese experts and expats seconded by sponsors for the Project development and management;
- Costs related to Power Purchaser letter of credit to be furnished to the Power Purchaser pursuant to the provisions of PPA; and
- Regulatory fees to be paid to NEPRA, SECP, and other relevant authorities in the normal course of business and for various consents to be obtained and maintained during construction phase.

Project Development Cost of US$ 56.252 million represents 3.7% of the total Project Cost and is fully comparable with the precedents of hydropower IPPs in Pakistan as shown below. Once again, it is worth mentioning here that some 50% of the project development costs comprises various consultancies and management services, which all are now subject to sixteen percent (16%) sales tax in Pakistan and/or AJ&K.

Project	Cost Approved (US$)	Construction Period	Year of approval
Karot HPP	44.74 million	60 months	2016
Azad Pattan HPP	56.25 million	69 months	2017

There are other factors which need to be considered:

1. Construction time 15% greater
2. Sales tax imposition of 16% on services
3. Year on year inflation

After accounting for the following factors (US$ 44.74 m x (1.15) x (1.08) x (1.05) = US$ 58.35 million while the cost claimed by the Project of US$ 56.25 million is fully compatible and competitive with the cost allowed by the Authority to Karot HPP.

It can be seen that the base cost has remained at US$ 41.65 million compared with US$ 36.68 million given in the Feasibility Study an increase of only 13.5% over 6 years. Additional costs of US$ 3 million and US$ 11.6 million on account of security management and Chinese expats respectively are both essential costs relevant to the present conditions on ground; leading to the Company's requests for approval of US$ 56,251,768 against Project Development costs which is considered as fully justified, prudent and reasonable and may be allowed.

7.12 ENVIRONMENTAL COST

Environment is a key area for development, construction and operation of hydropower projects and is the principal focus for International Lenders and national environmental protection agencies to ensure that the benefit of cheap hydropower generation is not offset by damage to the environment, including, ecology, flora, fauna, human habitation impacts. The cost is essentially required to meet the Company's legal obligations under various environmental laws enforceable in Pakistan and AJ&K, as well as to meet requirements of the environmental performance standards, which are obligatory and mandatory for financing of hydropower projects.

The Company is in the process of engaging the relevant consultant for revision of Environmental and Social Impact Assessment Report and preparation of comprehensive Resettlement Action Plan for the Project, and thereafter will obtain environmental approvals from Environmental Protection Agency AJ&K and Environmental Protection Agency, Punjab. It is noted that increasingly stringent environmental regulations are increasing the cost.

The environmental conditions for hydropower projects in the Poonch and Jhelum River basins have become highly critical and extensive. Therefore, pending completion of the ESIA Report, an amount of US$ 12.948 million has been estimated for environment and ecology mitigation and is included in the cost estimates which is broadly compatible with the environmental costs of US$ 11.19 million allowed by Authority to Karot hydropower project, in the same vicinity, hence fully justified for acceptance and approval by NEPRA.

7.13 Interest during Construction

The Interest during Construction has been calculated at US$ 218.004 million on the terms offered by Chinese, mentioned below, for construction period of sixty- nine (69) months.

Given that (i) interest payments made to Chinese banks will be subject to 10% withholding tax pursuant to Tax Treaty signed between Government of China and Pakistan, and (ii) as per terms agreed with the Lenders which require payments to be made such that amounts

received after tax deduction are the same as those that would have been received had there been no tax, the interest rate for foreign debt has been grossed as follows:

LIBOR = 1.30%
Margin = 4.20 %
WH Tax = 10%
Grossed up Interest Rate (p.a.) = (1.30% + 4.20%) / (100%- 10%) = 6.11%

It should be noted that the Margin of 4.2% quoted for foreign financing is subject to qualification that insurance policy issued by Sinosure shall cover 100% of the loan amount and interest thereon. Thus, the Authority is requested to approve IDC of US$ 218,004,125 with subsequent adjustment on actual at COD to account for:

1. Final 'Margin' agreed with the lenders under financing documents which is subject to finalization of Sinosure terms and coverage in case of Foreign Debt;
2. Actual Foreign and Local Debt proportion with a condition to avail maximum 20% local financing, if required;
3. Actual Local and Foreign Debt approved by NEPRA at COD;
4. Fluctuations in base LIBOR of 1.3% and base KIBOR of 6% (in case local debt is availed) during construction period;
5. Actual loan draw-downs pattern during the construction period;
6. Variation in withholding tax rate of 10% on interest payments to lenders; and
7. Variation in US$ to PKR parity.

8. OPERATIONS & MAINTENANCE

The costs incurred during the Project operational period comprise of:

1. Operations and Maintenance cost ("**O&M**") of the plant and the Company;
2. Water Use charges to be paid against use of water for electricity generation; and
3. Operational phase insurances.

8.1 OPERATION & MAINTENANCE COST

Once commissioned, the operation & maintenance activities of the plant will be entrusted to a qualified, experienced, proficient and competent O&M operator, who shall be responsible to operate and maintain the plant/complex in accordance with the PPA, Prudent Operating Practices and all applicable laws.

Typically, the O&M costs are divided into variable and fixed costs, notwithstanding that most hydropower costs are fixed. In addition, each hydropower is site specific and the operating costs of a plant are dependent on several factors such as water quality, sediment load, climatic conditions, site and plant layout and conditions, over-ground or underground powerhouse and operational mode, therefore, each hydropower project has its specific needs and related costs though some standardization is possible and can give a broad range of costs through domestic and international experience.

With regards to the site-specific issues of Azad Pattan HPP, the crucial and key areas to be considered are:

- Due to site conditions and transportation difficulties the project does not have 4 three-phase transformers but is required to have 12 single phase transformers which increases operational and maintenance/spares effort.
- The Project has an underground powerhouse leading to relatively higher O&M effort and cost.
- Sedimentation control, as the Jhelum River has a high sediment load with an average annual suspended sediment load of 36 m tonnes and bed load of 5 m tonnes. The sediment has a dual impact – firstly it accumulates in the reservoir thus affecting the reservoir water storage capacity; secondly it has an adverse impact on the generation plant and equipment in contact with the sediment loaded water causing erosion and cavitation, and requiring greater maintenance.
- Flood control as the River Jhelum is prone to sudden flood events which can often be very extreme.

- Maintenance and stabilization of the river valley slopes in the large 22 km reservoir area which is prone to landslides and seismic events.

The quantum of O&M cost has been computed on basis of expert advice, industry standards and experience of other hydropower projects, assumptions in relation to refurbishment of mechanical and electrical equipment like turbine overhaul, generator rewinding and reinvestments in communication and control systems.

In the case of Karot HPP the Authority has stated that "on recommendations of its experts and upon further verification from study conducted by an international consultant (Fichtner) *"A Guide for Developers & Investors"* issued in 2013 an average O&M cost of US$ 33.2/kW/year has been suggested for hydropower projects and further adding to it an additional amount for maintenance of reservoir and civil structures the Authority allowed US$ 36.34/kW/year (US$ 25,899 million).

The same publication referred to by the Authority states on Page 7 *"However, these figures do not include major electro-mechanical equipment replacement, which would be required a couple of times during the HPP lifespan and would raise average O&M costs to US$45/kW/year for large HPP; US$52/kW/year for small HPP".*

Further extracts from this publication referred to by NEPRA state: "*Hydropower maintenance works are highly critical for the long term operational integrity and life of hydropower projects. Proper and well thought out maintenance procedures not only aim to ensure the highest availability and reliability of power generation equipment and civil structures at optimum cost but also ensure realization of a hydropower projects long operating life*".

Robust maintenance activities will include preventive maintenance, reliability centered maintenance, condition based and just-in-time maintenance to prevent forced outages and avoid unnecessary maintenance. Depending on water quality, operational hours, type of operation (peaking with frequent starts/stops, or base load), a major overhaul of the generating units is required about every 7–12 years, and requires 4-6 weeks for medium and large units.

Major components will require, some replacements classified as routine maintenance costs while others e.g., power transformers or turbine runners are classified as major rehabilitation. Intake structures are usually the most maintenance-intensive components of hydropower schemes

The recommended annual budget for electromechanical equipment maintenance is 2.0-2.5 percent of initial investment costs, and typically 60% of the annual budget will be allocated to a reserve fund to finance major rehabilitation works that are required every 7-12 years, and unforeseen incidents.

It can therefore be seen that the major portion of the requested annual budget will go towards providing enough resources for ongoing maintenance activities, major periodic rehabilitation works and unforeseen incidents. It is not sensible or pragmatic to damage the operational integrity or long life of hydropower projects through under budgeting this very important cost head.

Based on the O&M cost proposed by this authoritative publication which was also endorsed by the Authority, the Company has proposed US$ 45 per kW per year for the total O&M cost with an annual cost of US$ 31,216,500 including both fixed and variable components. The break-up is given as follows:

Cost Head	US$ per annum
Variable O&M	4,012,393
Fixed O&M:	
- *Fixed O&M- Foreign (60%)*	16,322,464
- *Fixed O&M- Local (40%)*	10,881,643
Total O&M Cost (per annum)	**31,216,500**

A comparative of the Company's O&M cost approved by the Authority at Feasibility Stage and the EPC Stage Tariff Proposal, compared with Karot EPC stage tariff approval by Authority is shown below:

8.2 COMPARISON OF O&M COST WITH KAROT HPP

Element	Azad Pattan FS Tariff Proposal	Azad Pattan FS Tariff Decision	Azad Pattan EPC Tariff Proposal	Karot EPC Tariff Decision
Variable cost	2,069,000	3,082,384	4,012,393	5,179,618
Fixed cost (foreign)	11,079,008	7,546,976	16,322,464	14,504,001
Fixed cost (local)	7,027,942	5,031,312	10,881,643	6,216,000
Total	**20,175,950**	**15,660,672**	**31,216,500**	**25,899,620**

8.3 FIXED O&M COST

The Company proposed a fixed O&M cost of US$ 18,106,950 in the FS Tariff Proposal based on the Feasibility Study approved in 2011. The proposed cost was tailored around international standards and benchmarks prevailing at that time. However, the Authority determined US$ 12,578,288 for the FS stage in its FS Original Tariff Decision.

The Company has now proposed US$ 27,204,107 as fixed O&M cost, based on current standards and benchmarks, including the publication *"A Guide for Developers & Investors"* as quoted and adopted by the Authority in the case of the Karot HPP EPC stage tariff decision.

This will be divided between foreign local costs US$ 16,322,464 (60%) and local costs US$ 10,881,643 (40%), with the tariff components as shown below:

Element	***EPC Stage Tariff Proposal***	***Generation***	***Tariff component***	
	US$	*GWh*	*US¢*	*PKR*
Fixed cost (foreign)	16,322,464	3258	0.5010	0.5260
Fixed cost (local)	10,881,643	3258	0.3340	0.3507
Total	**27,204,107**		**0.8350**	**0.8767**

The Azad Pattan Hydropower Project is directly adjacent to Karot HPP and accordingly substantially the same conditions prevail except that Azad Pattan has two major differences (a) it is located in a very narrow and steep valley which creates additional difficulties; and (b) it has an underground powerhouse.

The Fixed O&M cost covers the O&M operator expenses on personnel, technical support from its head office/management fee, services and supplies, insurances under operator's purview, maintenance cost for generation facility, office maintenance and other overheads like vehicles, safety equipment, tools, staff colony expenses etc.

It also includes Land lease payments and Company's administration cost that *inter alia* includes salaries & wages, utilities, vehicles running, travel, office supplies, rent and taxes, lenders/company's advisors cost and site office expenses.

Cost of spares, replacement parts, E&M equipment requiring refurbishment such as turbine overhaul, generator rewinding and reinvestments in communication and control systems together with major overhauls including major electro-mechanical replacement are also included and form major part of the Fixed O&M Costs.

The local Fixed O&M Cost shall be indexed with local CPI General on quarterly basis and foreign Fixed O&M cost shall be indexed with US-CPI and also adjusted for USD/PKR exchange rate parity on quarterly basis.

The local CPI General, US-CPI and exchange rate used for indexation during operations phase shall be the average of the monthly rates prevailing in the preceding quarter.

8.4 VARIABLE O&M COST

An amount of US$ 4,012,293 has been proposed as the variable O&M component and will be denominated in PKR. The components are shown below:

Element	***EPC Stage Tariff Proposal***	***Generation***	***Tariff component***	
	US$	*GWh*	*US¢*	*PKR*
Variable O&M cost	4,012,393	3258	0.1232	0.1293

The Authority allowed US¢ 0.1027/kWh in the FS Original Tariff Decision in 2014 based on the FS Tariff Proposal submitted by the Company in 2012. The Company is now proposing US¢ 0.1232/kWh based on the net annual generation of 3258.00 GWh against a net contract capacity of 693.7 MW as confirmed and guaranteed by the EPC Contractor.

The total annual Variable O&M cost will be incurred in local currency, represents 12.85% of the total O&M Cost of the Project and is restricted by the overall cap of O&M cost as discussed above.

The variable O&M covers day to day running cost of the plant and in general includes cost of consumables, chemicals, trash removal and disposal and spare parts needed for regular day to day operations.

The variable O&M Cost shall be indexed with local CPI General on quarterly basis and the local CPI General to be used for indexation during operations phase shall be the average of the monthly rates prevailing in the preceding quarter.

8.5 WATER USE CHARGE

NEPRA in its FS Original Tariff Decision has allowed PKR 0.15/KWh as the Water Use Charge, as per Power Policy 2002, which payable to the Government of AJ&K is based on the actual energy dispatched to the grid. The Water Use Charge is a Pass-Through for the Company as it is paid to the respective provincial Government or the Government of AJ&K, as the case may be.

In this EPC stage Tariff Proposal, the Company has assumed Water Use Charge at 0.425 PKR/kWh as currently applicable to the Project, and payable to the Government of AJ&K based on the actual energy dispatched to the grid. **In case Water Use Charge of 0.15 PKR/kWh is assumed, the levelized tariff comes down to 7.8413 (US cents/kWh) from 8.1032 (US cents/kWh) on account of this adjustment only**.

No indexation is assumed on the Water Use Charge component of PKR 0.425/kWh. Therefore any change by the Government in the Water Use Charge and indexation thereon, will be allowed as a Pass-Through and/or One-Time Adjustment in the Reference Tariff, as the case may be.

8.6 INSURANCE DURING OPERATIONS

The insurance cost during operations is estimated at US$ 10.133 million (1% of the base EPC Cost of US$ 1,013.281 million). The tariff component for Insurance during operations is computed as follows:

Element	***EPC Stage Tariff Proposal***	***Generation***	***Tariff component***	
	US$	*GWh*	*US¢*	*PKR*
Operational Insurance	10,132,806	3258	0.3110	0.3266

The Insurance cost consists of 'Operations all risk' insurance, 'Business Interruption' insurance, 'Terrorism' and 'Third Party liability' insurance for the Project. These are standard insurances required by all the lenders and the Power Purchaser as per the terms of financing documents and Power Purchase Agreement.

Since the Pakistan Insurance/Reinsurance industry does not have sufficient capacity to manage such huge risks entirely, therefore this risk is required to be insured/reinsured internationally.

The Company has budgeted 1% of the EPC Cost which amounts to US$ 10.133 million, however, the insurance market is very sensitive and dynamic and conditions can rapidly change. As COD will occur on or about 2023, the operating insurance cost at COD will be based on the conditions then prevailing and will be re-ascertained subject to a cap of 1.35% of the final approved EPC Cost by NEPRA at COD.

Further, the operational insurance cost shall be adjusted for PKR/USD exchange rate parity on quarterly basis using the average monthly rates prevailing in the preceding quarter.

9 REFERENCE TARIFF, INDEXATION AND PAYMENT

9.1 TARIFF STRUCTURE

Government of Pakistan, under the Power Policy 2002, has promulgated a take-or-pay tariff structure whereby the tariff has been divided into two components:

- **Energy Purchase Price (EPP) - Variable Component:** The EPP component of the tariff is based on the actual dispatch of the plant, and is paid against at electrical output (in kWh) actually delivered during a month. It comprises of Water Use Charge and Variable O&M costs.

- **Capacity Purchase Price (CPP) - Fixed Component:** The CPP component of the tariff is based on the "availability" of the generating complex and is effectively paid for the fixed cost components that are independent of the amount of actual generation and payment is made on a monthly basis (in PKR/kW/Month), as long as the plant is available in accordance with the PPA provisions for the guaranteed contracted capacity. In essence, this component of the tariff is paid for "being there" regardless of dispatch. The CPP comprises of (i) Fixed O&M cost; (ii) Insurance cost; (iii) Return on Equity (ROE); (iv) Return on Equity During Construction (ROEDC); (v) Special ROE; (vi) Debt Servicing (Principal and interest); and (vii) Sinosure Fee.

9.2 REFERENCE TARIFF

The reference tariff (the "**Reference Tariff**") for the Azad Pattan Hydropower Project is calculated in terms of cost per kWh or cost per kW per month, as the case may be, derived for servicing/repayment of Debt and Equity as a function of the Project Cost. Levelized tariff for 30 years has been computed on net generations of 3,258 GWh a summary of which is as follows:

Tariff Component		
Energy Purchase Price (EPP)/kWh	**US Cents**	**PKR**
Water Use Charge	0.4048	0.4250
Variable O&M	0.1232	0.1293
Subtotal – EPP	**0.5279**	**0.5543**
Capacity Purchase Price (CPP)/kW/Month	**US $**	**PKR**
Fixed O&M	326.7996	343.1396
Insurance	121.7242	127.8104
Return on Equity (ROE)	787.5888	826.9682
ROE during Construction	390.7392	410.2761
Special ROE *(30 months prior to construction start)*	110.9190	116.4650
Debt Service Component	1172.9912	1231.6407
Sinosure Fee	54.0406	56.7426

Tariff Component		
Subtotal – CPP	**2964.8025**	**3113.0426**
	US Cents	**PKR**
Levelized Tariff /kWh (1-30 years)	**8.1032**	**8.5083**

9.3 TARIFF PAYMENT

From and after Commercial Operations Date the Company shall be paid, for each month, a "Capacity Payment" and an "Energy Payment" calculated in accordance with Section 9.4 below.

The Capacity Payment, for the applicable Month shall be equal to the product of the Tested Capacity and the Reference Capacity Purchase Price, as adjusted at the Commercial Operations Date and as further adjusted on such dates and periods as provided in Section 9.4 below.

The Energy Payment, paid for the applicable Month, shall be equal to the product of the despatched Net Electrical Output and the Energy Purchase Price, as adjusted at the Commercial Operations Date and further adjusted on such dates and periods as stipulated in Section 9.4 below.

9.4 TARIFF INDEXATION

The tariff components are denominated in PKR and related tariff receipts each month are in PKR. This leads to an inevitable "mismatch" in an environment of variation in currency exchange rates especially devaluation of the Rupee against the US Dollar. Any USD payments will be required to be funded from these PKR receipts and in an environment of PKR devaluation such PKR receipts may not be sufficient to meet the USD payments.

Accordingly, indexation for all the tariff components, except Water Use Charge, Return on Equity (ROE, ROEDC and Special ROE) and Debt Service Components including Sinosure fee, shall be made quarterly on 1st January 1st April 1st July and 1st October based on the latest information with respect to the Consumer Price Index (General), as notified by the Pakistan Federal Bureau of Statistics, US CPI (for all Urban consumers) as published by the US Bureau of Labor Statistics and the relevant exchange rate as notified by the National Bank of Pakistan. However, exchange rate quarterly indexation shall also be applicable to Return on Equity (ROE, ROEDC and Special ROE).

While the indexation for Debt Service Components including Sinosure fee, shall be made on semi-annual basis on 1st January and 1st July based on the latest information with respect to the relevant exchange rate as notified by the National Bank of Pakistan and LIBOR as

published by ICE Benchmark Administration Limited settlement rate for Dollar deposits for a period equal to six months appearing on Reuter's service.

The following components of the Tariff shall be subject to these indexation provisions:

A. <u>Energy Purchase Price</u>

Variable O&M

The Reference local variable O&M tariff component shall be quarterly indexed to the Pakistan CPI (General) inflation index in accordance with the following formula:

$$VO\&M_{(LRev)} = \quad VO\&M_{(LRef)} \quad x \left(\frac{CPI_{(Rev)}}{CPI_{(Ref)}}\right)$$

Where:

$VO\&M_{(LRev)}$ =	Revised local Variable O&M Tariff Component for the relevant Quarter after local CPI (General) indexation.
$VO\&M_{(LRef)} =$	Reference local O&M Tariff Component for the relevant Agreement Year that includes such Quarter.
$CPI_{(Rev)}$ =	Average local CPI (General) index for the Quarter prior to the Quarter in which indexation is applicable as notified by Pakistan Federal Bureau of Statistics.
$CPI_{(Ref)} =$	Reference local CPI (General) index as notified by Pakistan Federal Bureau of Statistics for the month of May 2017.

B. <u>Capacity Purchase Price</u>

Fixed O&M (Foreign)

The Reference Foreign Fixed O&M tariff component shall be quarterly indexed to US- CPI inflation index and PKR/US$ exchange rate variation in accordance with the following formula:

$$FO\&M_{(FRev)} = FO\&M_{(FRef)}\, x \left(\frac{US\ CPI_{(Rev)}}{US\ CPI_{(Ref)}}\right) x \left(\frac{FX\ USD_{(Rev)}}{FX\ USD_{(Ref)}}\right)$$

Where:

$FO\&M_{(FRev)}$ =	Revised Foreign Fixed O&M Tariff Component for the relevant Quarter after US-CPI indexation.

$FO\&M_{(FRef)}$ =	Reference Foreign Fixed O&M Tariff Component for the relevant Agreement Year that includes such Quarter, as adjusted by NEPRA for PKR/USD parity at COD stage tariff determination.
$US\ CPI_{(Rev)}$ =	Average US-CPI for the Quarter prior to the Quarter in which indexation is applicable as notified by US Bureau of Labor Statistics.
$US\ CPI_{(Ref)}$ =	Reference US-CPI (for all Urban-consumers), as notified by US Bureau of Labor Statistics, for the month of May 2017.
$FX\ USD_{(Rev)}$ =	Average TT & OD selling rate of PKR/USD for the Quarter prior to the Quarter in which indexation is applicable, as notified by National Bank of Pakistan.
$FX\ USD_{(Ref)}$ =	TT & OD selling rate of PKR/USD as notified by National Bank of Pakistan for the month in which COD occurs and used by NEPRA for COD stage tariff determination.

Fixed O&M (Local)

The Reference Local Fixed O&M tariff component shall be quarterly indexed to the CPI (General) index in accordance with the following formula:

$$FO\&M_{(LRev)} = FO\&M_{(LRef)}\ x\ \left(\frac{CPI_{(Rev)}}{CPI_{(Ref)}}\right)$$

Where:

$FO\&M_{(LRev)}$ =	Revised Local Fixed O&M Tariff Component for the relevant Quarter after local CPI (General) indexation.
$FO\&M_{(LRef)}$ =	Reference Local Fixed O&M Tariff Component for the relevant Agreement Year that includes such Quarter.
$CPI_{(Rev)}$ =	Average local CPI (General) index for the Quarter prior to the Quarter in which indexation is applicable as notified by Pakistan Federal Bureau of Statistics.
$CPI_{(Ref)}$ =	Reference CPI (General) index, as notified by Pakistan Federal Bureau of Statistics, for the month of May 2017.

Insurance Cost

The Insurance Component shall be adjusted annually for the actual premium paid subject to a cap of 1.35% of the NEPRA approved EPC Cost at COD. Reference Insurance tariff cost

component shall be quarterly indexed to the USD/PKR exchange rate variation in accordance with the following formula:

$$Insurance_{(Rev)} = Insurance_{(Ref)}\ x \left(\frac{FX\ USD_{(Rev)}}{FX\ USD_{(Ref)}}\right)$$

Where:

$Insurance_{(Rev)}$ =	Revised Insurance Tariff Component for the relevant Quarter after FX adjustment.
$Insurance_{(Ref)}$ =	Reference Insurance Component for the relevant Agreement Year that includes such Quarter, as adjusted by NEPRA for PKR/USD parity at COD stage tariff determination.
$FX\ USD_{(Rev)} =$	Average TT & OD selling rate of PKR/USD for the Quarter prior to the Quarter in which indexation is applicable, as notified by National Bank of Pakistan.
$FX\ USD_{(Ref)} =$	TT & OD selling rate of PKR/USD, as notified by National Bank of Pakistan for the month in which COD occurs and used by NEPRA for COD stage tariff determination.

Return on Equity, ROE during construction and Special ROE

The Return on Equity (ROE), Return on Equity during Construction (ROEDC), and Special Return on Equity (Special ROE) tariff components shall be quarterly indexed to the PKR/US$ exchange rate variation in accordance with the following formula:

$$ROE_{(Rev)} = ROE_{(Ref)}\ x\ \left(\frac{FX\ USD_{(Rev)}}{FX\ USD_{(Ref)}}\right)$$

$$ROEDC_{(Rev)} = ROEDC_{(Ref)}\ x\ \left(\frac{FX\ USD_{(Rev)}}{FX\ USD_{(Ref)}}\right)$$

$$Special\ ROE_{(Rev)} = Special\ ROE_{(Ref)} x\ \left(\frac{FX\ USD_{(Rev)}}{FX\ USD_{(Ref)}}\right)$$

Where:

$ROE_{(Rev)}$ =	Revised ROE Tariff Component for the relevant Quarter after FX adjustment.
$ROEDC_{(Rev)}$ =	Revised ROEDC Tariff Component for the relevant Quarter after FX adjustment.
$Special\ ROE_{(Rev)}$ =	Revised Special ROE Tariff Component for the relevant Quarter after FX adjustment.

$ROE_{(Ref)}$ =	Reference ROE Tariff Component for the Agreement Year that includes such Quarter, as adjusted by NEPRA for PKR/USD parity at COD stage tariff determination.
$ROEDC_{(Ref)}$ =	Reference ROEDC Tariff Component for the Agreement Year that includes such Quarter, as adjusted by NEPRA for PKR/USD parity at COD stage tariff determination.
$Special\ ROE_{(Ref)}$ =	Reference Special ROE Tariff Component for the Agreement Year that includes such Quarter, as adjusted by NEPRA for PKR/USD parity at COD stage tariff determination.
$FX\ USD_{(Rev)} =$	Average TT & OD selling rate of PKR/USD for the Quarter prior to the Quarter in which indexation is applicable, as notified by National Bank of Pakistan.
$FX\ USD_{(Ref)} =$	TT & OD selling rate of PKR/USD as notified by National Bank of Pakistan, for the month in which COD occurs and used by NEPRA for COD stage tariff determination.

Sinosure Fee

The Sinosure Fee tariff cost component shall be semi-annually indexed to the USD/PKR exchange rate and variation in foreign interest component due to LIBOR, based on the revised TT&OD selling rate of USD as notified by the National Bank of Pakistan in accordance with the following formula:

$$SF_{(Rev)} = SF_{(Ref)}\ x\ \left(\frac{FX\ USD_{(Rev)}}{FX\ USD_{(Ref)}}\right) x \left(\frac{Foreign\ Interest\ _{(Rev)}}{Foreign\ Interest\ _{(Ref)}}\right)$$

Where:

$SF_{(Rev)}$ =	Revised Sinosure Fee Tariff component for the relevant Semiannual Period after indexation.
$SF_{(Ref)}$ =	Reference Sinosure Fee Tariff Component for the Agreement Year that includes such Semiannual Period, as adjusted by NEPRA for PKR/USD parity at COD stage tariff determination.
$FX\ USD_{(Rev)} =$	Average TT & OD selling rate of PKR/USD for the Semiannual Period prior to the Semiannual Period in indexation is applicable, as notified by National Bank of Pakistan
$FX\ USD_{(Ref)} =$	TT & OD selling rate of PKR/USD, as notified by National Bank of Pakistan for the month in which COD occurs and used by NEPRA for COD stage tariff determination.

$Foreign\ Interest_{(Ref)=}$	Reference Foreign Interest component of Tariff for the relevant Agreement Year that includes such Semiannual period, as adjusted by NEPRA for PKR/USD parity at COD stage tariff determination.
$Foreign\ Interest_{(Rev)=}$	The revised Foreign Interest component of tariff for the relevant Semiannual Period after adjustment for LIBOR variation.

Foreign Debt Service Component

The Principal portion of foreign debt and Interest thereon shall be semi-annually indexed to the PKR/US$ exchange rate variation in accordance with the following formula:

$$Principal\ Foreign_{\ (Rev)} = Principal\ Foreign_{\ (Ref)}\ x\ \left(\frac{FX\ USD_{(Rev)}}{FX\ USD_{(Ref)}}\right)$$

$$Interest\ Foreign_{(Rev)} = Interest\ Foreign_{(Ref)}\ x\ \left(\frac{FX\ USD_{(Rev)}}{FX\ USD_{(Ref)}}\right)\ x\ \left(\frac{LIBOR_{(Rev)}+4.2\%}{LIBOR_{(Ref)}+4.2\%}\right)$$

Where:

$Principal\ Foreign_{(Rev)}$ =	Revised Foreign Debt Principal Component for the relevant Semiannual period after indexation.
$Interest\ Foreign_{\ F(Rev)} =$	Revised Foreign Interest Component for the relevant Semiannual Period after indexation.
$Principal\ foreign_{(Ref)} =$	Reference Foreign Principal Component of Tariff for the relevant Agreement Year that includes such Semiannual Period, as adjusted by NEPRA for PKR/USD parity at COD stage tariff determination.
$Interest\ Foreign_{(Ref)} =$	Reference Foreign Interest Component of Tariff for the relevant Agreement Year that includes such Semiannual Period, as adjusted by NEPRA for PKR/USD parity at COD stage tariff determination.
$LIBOR_{(Ref)}$ =	LIBOR for the month in which COD occurs and used by NEPRA for COD stage tariff determination.
$LIBOR_{(Rev)}$ =	LIBOR for the Semiannual Period for which indexation is applicable.
$FX\ USD_{(Rev)} =$	Average TT & OD selling rate of PKR/USD for the Semiannual Period prior to the Semiannual Period in which indexation is applicable, as notified by National Bank of Pakistan.

$FX\ USD_{(Ref)} =$	TT & OD selling rate of PKR/USD, as notified by National Bank of Pakistan for the month in which COD occurs and used by NEPRA for COD stage tariff determination.

If Local Loan is availed, the local Interest tariff component shall be adjusted for variation in 6-month KIBOR on a semi-annual basis.

9.5 REFERENCE TARIFF TABLE

Year	Energy Purchase Price -EPP (PKR/Kwh)			Capacity Purchase Price - CPP (PKR /KW/Month)										Total PKR/Kwh
	Water Use Charge	Variable O&M	Total EPP	Fixed O&M		Insurance	Special ROE	ROEDC	ROE	Sinosure Fee	Debt Servicing		Total CPP	
				Foreign	Local						Principal	Interest		
1	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	114.0528	840.1217	863.8843	3,628.53	9.8254
2	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	107.3610	892.2468	811.7592	3,621.84	9.8083
3	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	100.2539	947.6060	756.4000	3,614.73	9.7902
4	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	92.7059	1,006.4000	697.6060	3,607.18	9.7709
5	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	84.6896	1,068.8419	635.1641	3,599.17	9.7504
6	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	76.1759	1,135.1579	568.8481	3,590.65	9.7287
7	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	67.1340	1,205.5885	498.4175	3,581.61	9.7056
8	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	57.5311	1,280.3889	423.6171	3,572.01	9.6810
9	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	47.3324	1,359.8303	344.1757	3,561.81	9.6550
10	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	36.5009	1,444.2007	259.8053	3,550.98	9.6273
11	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	24.9973	1,533.8058	170.2002	3,539.47	9.5979
12	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	812.7790	12.7800	1,628.9704	75.0356	3,527.26	9.5667
13	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
14	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
15	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
16	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
17	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
18	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
19	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
20	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
21	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
22	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110

Year	Energy Purchase Price -EPP (PKR/Kwh)			Capacity Purchase Price - CPP (PKR /KW/Month)										Total PKR/Kwh
	Water Use Charge	Variable O&M	Total EPP	Fixed O&M		Insurance	Special ROE	ROEDC	ROE	Sinosure Fee	Debt Servicing		Total CPP	
				Foreign	Local						Principal	Interest		
23	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
24	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
25	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
26	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
27	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
28	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
29	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
30	0.4250	0.1293	0.5543	205.8838	137.2558	127.8104	116.4650	410.2761	863.9649	-	-	-	1,861.66	5.3110
Levelized Tariff	**0.4250**	**0.1293**	**0.5543**	**205.8838**	**137.2558**	**127.8104**	**116.4650**	**410.2761**	**826.9682**	**56.7426**	**807.3703**	**424.2704**	**3,113.0426**	**8.5083**

Levelized Tariff (1-30 years) discounted at 10% per annum = US Cents 8.1032 at Reference Exchange Rate of 1 US$ = PKR 105.

9.6 REFERENCE DEBT SERVICING SCHEDULE

Semi-Annual Period	Opening Balance	Interest	Principal	Debt Service	Closing Balance	Tariff Component	
						Principal	Interest
	US$	US$	US$	US$	US$	US Cents/KWh	US cents/KWh
1	1,137,125,636	34,745,506	32,801,292	67,546,798	1,104,324,344		
2	1,104,324,344	33,743,244	33,803,554	67,546,798	1,070,520,790	2.0443	2.1022
3	1,070,520,790	32,710,357	34,836,440	67,546,798	1,035,684,350		
4	1,035,684,350	31,645,911	35,900,887	67,546,798	999,783,463	2.1712	1.9753
5	999,783,463	30,548,939	36,997,859	67,546,798	962,785,605		
6	962,785,605	29,418,449	38,128,349	67,546,798	924,657,256	2.3059	1.8406
7	924,657,256	28,253,416	39,293,382	67,546,798	885,363,874		
8	885,363,874	27,052,785	40,494,013	67,546,798	844,869,862	2.4490	1.6976
9	844,869,862	25,815,468	41,731,330	67,546,798	803,138,532		
10	803,138,532	24,540,344	43,006,454	67,546,798	760,132,078	2.6009	1.5456
11	760,132,078	23,226,258	44,320,540	67,546,798	715,811,539		
12	715,811,539	21,872,019	45,674,778	67,546,798	670,136,760	2.7623	1.3842
13	670,136,760	20,476,401	47,070,397	67,546,798	623,066,364		
14	623,066,364	19,038,139	48,508,659	67,546,798	574,557,705	2.9337	1.2128
15	574,557,705	17,555,930	49,990,868	67,546,798	524,566,837		
16	524,566,837	16,028,431	51,518,367	67,546,798	473,048,470	3.1157	1.0308
17	473,048,470	14,454,259	53,092,539	67,546,798	419,955,932		
18	419,955,932	12,831,987	54,714,811	67,546,798	365,241,121	3.3090	0.8375
19	365,241,121	11,160,145	56,386,652	67,546,798	308,854,468		
20	308,854,468	9,437,220	58,109,578	67,546,798	250,744,890	3.5143	0.6322
21	250,744,890	7,661,649	59,885,148	67,546,798	190,859,742		
22	190,859,742	5,831,825	61,714,972	67,546,798	129,144,770	3.7324	0.4142
23	129,144,770	3,946,090	63,600,708	67,546,798	65,544,062		
24	65,544,062	2,002,735	65,544,062	67,546,798	-	3.9639	0.1826

10. TARIFF ADJUSTMENTS, PASS THROUGH AND ASSUMPTIONS

10.1 ONE TIME ADJUSTMENTS

The Project Cost and the Reference Tariff at EPC stage shall be adjusted for the below items at Commercial Operations Date ("**One- time Adjustments**").

1. The reference local civil works cost under the Construction Contract will be adjusted on account of variation in the price index of construction materials i.e. Steel, Cement, Fuel and Labour, in accordance with the NEPRA Mechanism, with details provided at Annexure-A (Section-11) of this Tariff Proposal.

2. The reference tunnel cost shall be adjusted for the variations in cost due to geological conditions related to tunneling as verified by Re-Opener Verifier, appointed pursuant to the terms of the Power Purchase Agreement and NEPRA Mechanism. The reference tunnel tables are provided in Annexure-A (Section-11) of this Tariff Proposal.

3. Any withholding tax, in excess of seven percent (7%), on onshore works under the Construction Contract, in Pakistan or AJ&K, shall be allowed and adjusted in the Project Cost and Reference Tariff.

4. No provision has been made for (i) general sales tax or provincial sales tax on the Construction Contract and (ii) withholding tax, general sales tax or provincial sales tax on Offshore Supply Contract. Any variation in Project Cost on account of applicable withholding tax or sales tax on the Construction or Offshore Supply Contract shall be allowed with adjustment in the Project Cost and Reference Tariff.

5. Actual stamp duty, registration and similar charges paid on the (i) Land Lease Documents in Pakistan and AJ&K; and (ii) Land Security Documents, in the form acceptable to the Project lenders, in Pakistan and AJ&K pursuant to applicable law, shall be adjusted in the Project Cost and Reference Tariff.

6. Cost of Land Acquisition and Resettlement claimed by the Company in this proposal is US$ 12.028 million which will be adjusted based on actual incurred cost in accordance with NEPRA Mechanism for Determination of Tariff for Hydropower Projects including the costs related to raising or replacement of bridges, relocation of public infrastructure (electricity poles, roads etc.), tree plantation, compensation for loss of livelihood, households, residential and commercial structures.

7. The principal repayment and cost of debt will be adjusted at COD in accordance with the actual debt drawdown pattern, actual foreign/local debt proportion and any variation in LIBOR and KIBOR at the relevant date.

8. Interest during Construction claimed by the Company will be adjusted at COD based on (i) final 'Margin' agreed with the lenders under financing documents; (ii) actual local and foreign debt proportion, if availed; (iii) variation in PKR/US$ parity, (iv) actual foreign and local NEPRA approved debt at COD; (v) actual debt drawdown, (vi) changes in applicable WHT rate of 10% on foreign interest payments (grossed up at the actual tax rate), and (vii) fluctuations in LIBOR and KIBOR during the Project construction period.

9. The Return on Equity (ROE), Return on Equity During Construction (ROEDC) and Special ROE components shall be adjusted at COD on the basis of actual Equity investment, pattern of Equity injections and variation in PKR / USD exchange rate during (i) period of thirty (30) months prior to construction start, and (ii) during the construction period.

10. The cost of Insurance during construction will be adjusted based on the actual cost subject to maximum of 2.75% of the adjusted and approved EPC Cost by NEPRA at COD.

11. The reference insurance cost component of Reference Tariff shall be adjusted at COD for variation in USD/PKR parity over the Reference Exchange Rate.

12. The reference foreign fixed O&M cost component of Reference Tariff shall be adjusted at COD for variation in USD/PKR parity over the Reference Exchange Rate.

13. The reference water use charge component of Reference Tariff shall be adjusted at COD for (i) variation in Water Use Charge from Rs 0.4250/kWh payable to Government of AJ&K and (ii) any water utilization cess or similar charges payable to Indus River System Authority (**IRSA**) or any other relevant authority.

14. The Lender's Fee shall be adjusted at actual at COD for (i) final rates for Commitment and Management Fee agreed with the Lenders, (ii) NEPRA approved debt at COD, (iii) variation in WHT rate of 10% assumed on such payments to the financiers and (iv) variation on account of USD/PKR parity.

15. The estimated custom duty of 5% has been included in the Project Cost. No other taxes or duties, including but not limited to, sales tax, excise duty or road tax have been assumed. The Company shall be allowed adjustment in the Project Cost to compensate actual custom duties and taxes paid on import of Plant and Machinery.

16. Any variation in Project Cost, up to and including the COD, on account of variation in US$/Rupee parity shall be allowed through an adjustment in Project Cost to allow for

full recovery of such costs. Relevant components of Reference Tariff shall be adjusted at COD on account of variation in PKR/USD parity over the Reference Exchange Rate**.**

17. The Sinosure Fee during construction phase shall be adjusted based on (i) final rate of Sinosure premium, (ii) Foreign Debt and its related IDC approved by NEPRA at COD, (iii) actual Foreign Debt draw down, (iv) variation in WHT rate of 20% assumed on Sinosure fee payments and (v) any variation in PKR/USD exchange rate during the construction period of the Project.

18. The reference Sinosure Fee component of Reference Tariff for each year shall be adjusted at COD for (i) final rate of Sinosure premium and interest Margin agreed with the lenders, (ii) Foreign Debt and related IDC approved by NEPRA at COD, (iii) LIBOR at the relevant date and (iv) variation in USD/PKR parity.

19. The interconnection arrangement and delivery point, for the Complex electricity generation, is based on the scheme whereby (a) the transmission line and interconnection at the outgoing bus bar of the power plant shall be built, operated and maintained by the Company; while (b) the transmission line and interconnection with the grid up to the Complex shall be built, owned, maintained and operated by the Power Purchaser. Any other scheme required by the Power Purchaser which entails additional cost shall be allowed as an adjustment to the Project Cost and Reference Tariff at COD.

20. The Company shall have the flexibility to finance the difference in Project Cost, which shall arise on account of above adjustments, through combination of any of the debt financing options available at that time. The Project Cost, debt profile and relevant components of Reference Tariff shall be adjusted at COD due to such additional financing, if required.

21. The Reference Tariff Table shall be revised at COD while taking into account all the above adjustments.

10.2 PASS-THROUGH ITEMS

Pass-Through items shall be payable by the Power Purchaser to the Company based on actual cost reasonably incurred by the Company. The following items will be allowed as a Pass-Through item ("**Pass-Through**") under the Reference Tariff, if the Company is obligated to pay any of such items:

a) Any type of tax on the income of the Company, whether in Pakistan or AJ&K.

b) Federal or provincial sales tax or the cost of such tax to be paid by the Company on Operation & Maintenance cost/services, whether in AK&K or Pakistan.

c) Withholding tax (or the burden of such tax) payable by the Company on O&M cost/services beyond 15% of the invoice value excluding sales tax; whether in Pakistan or AJ&K.

d) Customs and any other import tax to be paid with respect to O&M of the Project.

e) Any Water Use Charge payable in excess of Rs 0.4250/kWh assumed in the Reference Tariff along with any indexation thereon.

f) Any water utilization cess payable by the Company to Indus River System Authority or any other relevant authority, including any indexation thereon.

g) Provincial tax, AJ&K tax, turn over tax, excise duty, other duties, levies, charges, surcharges and other governmental impositions including without limitations export tax, octroi, rawangi, mahsool etc. wherever and whenever payable on the generation, sale, exportation or supply of electricity or electricity generation capacity by the Company during the term of Power Purchase Agreement.

h) Under the GOP Guidelines for Tariff of Power Projects dividend tax is like any other tax and accordingly dividend withholding tax shall be allowed as a pass-through item. The following formula shall be used for calculation of the maximum amount to be allowed as Pass-through item:

$$WHT\ payable = \Big[\{17\%\ x\ (E_{(Ref)} - E_{(Red)})\} + ROEDC\ Comp_{(Ref)} + SROE\ Comp_{(Ref)}\Big]\ x\ 7.5\%$$

Where:

$E_{(Ref)}$ = Reference Equity at COD.

$E_{(Red)}$ = Equity redeemed

$ROEDC\ Comp_{(Ref)}$ = Reference ROEDC component at COD.

$SROE\ Comp_{(Ref)}$ = Reference SROE component at COD

Withholding tax calculated according to the above formula shall also be adjusted for variation in currency (US$ to PKR).

i) Any amounts payable by the Company in Workers Welfare Fund and Workers Profit Participation Fund.

j) Any Zakat deduction on the dividends under the Zakat Ordinance.

k) No hedging cost is assumed for exchange rate variations during construction and any cost overruns resulting from such variations shall be allowed as a Pass-Through.

l) Any cost incurred by the Company and/or Project, due to the "**Change in Tax**" regime under the Power Purchase Agreement.

m) Any cost incurred by the Company which is required to be incurred by the Power Purchaser pursuant to the terms of Power Purchase Agreement.

n) Cost incurred by the Company due to change in General Assumptions as listed in section 10.2 of this Tariff Proposal.

o) Any other taxes, duties, levies or governmental impositions of whatsoever nature not factored in Reference Tariff calculation shall be allowed as a Pass-Through item.

10.3 GENERAL ASSUMPTIONS

The Project Cost and Reference Tariff is based on the following assumptions which, amongst any others, will be incorporated into the PPA and any change in these assumptions shall be allowed a commensurate adjustment in Project Cost and Reference Tariff:

a) The Project is assumed to be constructed on Build, Own, Operate and Transfer (BOOT) basis.

b) Debt to Equity ratio of 75:25 with 100% foreign financing is assumed. The cost impact of any change in this financial structure on or before financial closing upto a maximum of 30% equity shall be adjusted in the Reference Tariff.

c) The debt is being arranged solely from Chinese financial institutions. If the composition of finance i.e. percentage of local and foreign components changes on or before financial closing adjustment in Reference Tariff, to reflect cost of actual financial structure in terms of foreign and local financing, shall be allowed at COD.

d) Equity IRR of 17% is assumed over the life of the Project. The Project would be entitled to any enhancement of such return if and when announced for the sector as a whole.

e) Constant streams for ROE, Special ROE and ROEDC are assumed over thirty (30) years concession life of the Project with actual equity redemption assumed to commence after the debt has been repaid.

f) The foreign debt pricing is assumed to be base LIBOR of 1.3% + Margin of 420 bps per annum.

g) Payments to lenders is grossed up for 10% withholding tax, payments to foreign advisers and agents have been grossed up for 15% withholding tax and payments to local advisers and agents have been grossed up for 10% withholding tax.

h) Door to door loan tenure of foreign debt assumed to be eighteen (18) years with six (6) years grace period and twelve (12) years repayment period. Any change in this structure and the corresponding cost impact shall be adjusted in the Reference Tariff.

i) The drawdown pattern of Debt and Equity may vary from those specified in this Tariff Proposal; accordingly, the Project Cost and/or Reference Tariff, as applicable, shall be adjusted based on the actual drawdown pattern of Debt and Equity at COD.

j) Adjustment of Project Cost and Reference Tariff for variation in PKR/USD parity will be allowed at COD.

k) The Power Purchase Agreement is framed as a take-or-pay arrangement and capacity payment shall be made regardless of despatch provided the complex is available.

l) Hydrological risk is borne by the Power Purchaser.

m) The Power Purchaser shall be solely responsible for design, financing, engineering, procurement, construction, testing and commissioning of the interconnection and transmission facilities capable for dispersal of power from the Project and will be solely responsible for its operation and maintenance. Furthermore, the Power Purchaser shall cause to make available the said facilities before the deadline set under the Power Purchase Agreement.

n) Applicable Custom Duties for import of Plant and Machinery for the Project is assumed to be 5.0%. No other duties, cess, or taxes (including federal excise duty) have been assumed.

o) Any tax on income from sale of electricity, general or provincial sales tax, and all other corporate taxes shall be allowed as Pass-Through.

p) No withholding tax on the Offshore Supply Contract (supply of electrical and mechanical equipment) for the Project is assumed and incidence of any such tax shall be allowed as an adjustment in Reference Tariff or a Pass-Through as appropriate.

q) Only 7% withholding tax is considered on construction works under the Construction Contract. General sales tax and provincial sales tax is not assumed on the Construction Contract. Any increase in taxes or incidence of additional taxes shall be allowed as an adjustment in Project Cost and Reference Tariff.

r) Only 15% withholding tax is considered on O&M cost/services on the value prior to impact of sales tax. No provision for sales tax on operations and maintenance cost has been made, and not included in the O&M cost under the Reference Tariff.

s) Reference exchange rate is US$ 1 = PKR 105.00 and exchange rate for EPC Cost conversion is US$ 1 = PKR 104.827. Any variation in the USD/PKR parity shall be allowed as an adjustment for debt servicing or any other project costs denominated in foreign currency and the respective tariff components shall be adjusted accordingly to ensure that sufficient funds are available through the Rupee denominated tariff to defray and fully meet the project liabilities denominated in foreign exchange.

t) Cost of working capital has not been assumed; accordingly, no provision for working capital has been made on account of any delay in payments by the Power Purchaser.

u) Cost for establishment of letters of credit for import of Plant and Machinery have not been considered; but will be claimed if such facility is considered essential and necessary.

v) No agency fee (for raising of debts) has been assumed.

w) Costs in relation to debt service reserve account, maintenance reserves and contingency reserves have not been considered; and the Company shall claim these costs if obligated under the financing arrangements.

x) At COD, the Project cost and Reference Tariff would be adjusted to account for all the 'One-Time Adjustments' stated in this Tariff Proposal.

y) The Company will be compensated by Power Purchaser for all the cost incurred in relation to 'Pass-Through' items as mentioned in this Tariff Proposal.

z) Any additional indexations or concessions allowed by the GOP or other regulatory authorities to any IPPs shall be allowed to the Company without any discrimination.

aa) In case of any unintentional error or omission, typographic errors and any genuine assumption being overlooked the error will be immediately corrected/incorporated as appropriate and advised to the Authority as soon as practicable.

11. ADJUSTMENTS UNDER NEPRA MECHANISM

A. ADJUSTMENTS IN COST OF CIVIL WORKS ESCALATION:

The amounts payable to the EPC Contractor in local currency under onshore works amounting to PKR 31,649,851,568 shall be adjusted for rises or falls in the cost of labour, steel, fuel and cement in accordance with the given formula which calculates the amount of escalation allowed in the relevant month “n” of the construction period;

$$P_n = a + b\frac{C_n}{C_o} + c\frac{S_n}{S_o} + d\frac{F_n}{F_o} + e\frac{L_n}{L_o}$$

Where:

i. "Pn" is the adjustment multiplier to be applied to the estimated contract value attributable to the civil works, in the relevant currency of the work carried out in period "n", this period being a month;

ii. "a" is a fixed coefficient equivalent to 48.07%, stated in the relevant table of adjustment data, representing the non-adjustable portion in contractual payments;

iii. "b", "c", "d", “e”. are coefficients representing the proportion of each cost element related to the execution of the Works, as follows b = 15.71%, c= 12.6%, d= 14%, and e= 9.62%;

iv. "Cn", "Sn", “Fn”, "Ln", are the current cost indices for Cement, Steel, Fuel, and Labour respectively for month "n", expressed Pakistani Rupees, each of which is applicable to the relevant tabulated cost element on relevant month; and

v. "Co ", "So", “Fo”, " Lo” are the base cost indices for Cement, Steel, Fuel, and Labour respectively, expressed in Pakistani Rupees, each of which is applicable in the month of October 2016.

For labour (L), the index shall be the wages applicable for the “Mason (raj)” for the city of “Rawalpindi” as given under Intercity Consumer Prices, presently in Table 7.11, of the Monthly Bulletin of Statistics, published by the Pakistan Bureau of Statistics, Statistics Division, of the Government of Pakistan.

For cement (C), the cost index shall be the index number applicable to “Cement” as given under Index Numbers of Wholesales Prices by Commodities - Other Transportable Goods, presently in Table 7.9, of the Monthly Bulletin of Statistics, published by the Pakistan Bureau of Statistics, Statistics Division, of the Government of Pakistan.

For fuel (F), the index shall be the index number applicable to “Diesel Oil” as given under Index Number of Wholesale Prices by Commodities-Other Transportable Goods, presently in Table

7.9, of the Monthly Bulletin of Statistics, published by the Statistics Division, Pakistan Bureau of Statistics, of the Government of Pakistan.

For steel (S), the cost index shall be the index number applicable to “Iron Bars & Sheets” as given under Index Numbers of Wholesales Prices by Commodities-Metal Products, Machinery and Equipment, presently in Table 7.9, of the Monthly Bulletin of Statistics, published by the Statistics Division, Pakistan Bureau of Statistics, of the Government of Pakistan.

The reference Material Cost Escalation table as proposed by the EPC Contractor is provided as follows:

MATERIAL COST ESCALATION TABLE

(Exchange Rate: 1 USD = 104.827 PKR)

Month	Amounts (PKR)						Coefficients					
	Fixed	Cement	Steel	Fuel	Labor	Total	Fixed	Cement	Steel	Fuel	Labor	Total
	PKR	PKR	PKR	PKR	PKR	PKR	a	b	c	d	e	
1	567,177,594	185,362,180	148,667,312	165,185,902	113,506,313	1,179,899,302	48.07%	15.71%	12.60%	14.00%	9.62%	100%
3	133,817,646	43,733,622	35,075,980	38,973,311	26,780,232	278,380,790	48.07%	15.71%	12.60%	14.00%	9.62%	100%
5	1,021,133,214	333,721,714	267,657,135	297,396,817	204,354,099	2,124,262,979	48.07%	15.71%	12.60%	14.00%	9.62%	100%
7	278,382,514	90,979,598	72,968,997	81,076,663	55,711,250	579,119,023	48.07%	15.71%	12.60%	14.00%	9.62%	100%
9	432,334,755	141,293,509	113,322,611	125,914,012	86,520,914	899,385,801	48.07%	15.71%	12.60%	14.00%	9.62%	100%
10	714,484,850	233,504,410	187,279,158	208,087,953	142,986,151	1,486,342,522	48.07%	15.71%	12.60%	14.00%	9.62%	100%
13	2,366,780,617	773,499,553	620,375,198	689,305,776	473,651,540	4,923,612,683	48.07%	15.71%	12.60%	14.00%	9.62%	100%
14	1,880,647,001	614,623,765	492,950,951	547,723,279	376,364,139	3,912,309,134	48.07%	15.71%	12.60%	14.00%	9.62%	100%
15	222,303,828	72,652,239	58,269,778	64,744,198	44,488,513	462,458,555	48.07%	15.71%	12.60%	14.00%	9.62%	100%
16	1,102,883,406	360,438,908	289,085,311	321,205,901	220,714,341	2,294,327,867	48.07%	15.71%	12.60%	14.00%	9.62%	100%
21	994,308,279	324,954,921	260,625,844	289,584,271	198,985,763	2,068,459,078	48.07%	15.71%	12.60%	14.00%	9.62%	100%
22	1,790,078,281	585,024,543	469,211,282	521,345,869	358,239,090	3,723,899,067	48.07%	15.71%	12.60%	14.00%	9.62%	100%
24	356,688,431	116,571,152	93,494,367	103,882,630	71,382,207	742,018,788	48.07%	15.71%	12.60%	14.00%	9.62%	100%
25	726,333,575	237,376,752	190,384,919	211,538,798	145,357,374	1,510,991,418	48.07%	15.71%	12.60%	14.00%	9.62%	100%
26	995,591,705	325,374,364	260,962,253	289,958,059	199,242,609	2,071,128,990	48.07%	15.71%	12.60%	14.00%	9.62%	100%
27	871,631,235	284,862,215	228,470,014	253,855,571	174,435,042	1,813,254,077	48.07%	15.71%	12.60%	14.00%	9.62%	100%
32	448,377,708	146,536,588	117,527,754	130,586,393	89,731,507	932,759,949	48.07%	15.71%	12.60%	14.00%	9.62%	100%
33	919,199,107	300,408,112	240,938,397	267,709,330	183,954,554	1,912,209,500	48.07%	15.71%	12.60%	14.00%	9.62%	100%
37	335,514,971	109,651,346	87,944,427	97,716,031	67,144,872	697,971,647	48.07%	15.71%	12.60%	14.00%	9.62%	100%
38	847,389,171	276,939,544	222,115,738	246,795,265	169,583,604	1,762,823,321	48.07%	15.71%	12.60%	14.00%	9.62%	100%
39	811,357,889	265,163,978	212,671,300	236,301,445	162,372,850	1,687,867,463	48.07%	15.71%	12.60%	14.00%	9.62%	100%
40	602,329,277	196,850,280	157,881,192	175,423,546	120,541,037	1,253,025,331	48.07%	15.71%	12.60%	14.00%	9.62%	100%
42	798,966,912	261,114,420	209,423,405	232,692,672	159,893,108	1,662,090,517	48.07%	15.71%	12.60%	14.00%	9.62%	100%

Month	Amounts (PKR)						Coefficients					
	Fixed	Cement	Steel	Fuel	Labor	Total	Fixed	Cement	Steel	Fuel	Labor	Total
	PKR	PKR	PKR	PKR	PKR	PKR	a	b	c	d	e	
43	685,981,726	224,189,160	179,807,983	199,786,648	137,281,968	1,427,047,485	48.07%	15.71%	12.60%	14.00%	9.62%	100%
44	453,108,608	148,082,717	118,767,807	131,964,229	90,678,278	942,601,639	48.07%	15.71%	12.60%	14.00%	9.62%	100%
48	222,903,949	72,848,368	58,427,080	64,918,978	44,608,612	463,706,988	48.07%	15.71%	12.60%	14.00%	9.62%	100%
49	1,991,345,359	650,801,656	521,966,955	579,963,283	398,517,627	4,142,594,880	48.07%	15.71%	12.60%	14.00%	9.62%	100%
50	1,129,295,025	369,070,623	296,008,265	328,898,073	225,999,961	2,349,271,947	48.07%	15.71%	12.60%	14.00%	9.62%	100%
52	827,636,104	270,483,944	216,938,109	241,042,343	165,630,525	1,721,731,025	48.07%	15.71%	12.60%	14.00%	9.62%	100%
54	102,878,777	33,622,334	26,966,353	29,962,614	20,588,596	214,018,675	48.07%	15.71%	12.60%	14.00%	9.62%	100%
55	237,375,271	77,577,814	62,220,271	69,133,634	47,504,683	493,811,672	48.07%	15.71%	12.60%	14.00%	9.62%	100%
56	104,210,622	34,057,601	27,315,453	30,350,503	20,855,132	216,789,310	48.07%	15.71%	12.60%	14.00%	9.62%	100%
57	1,120,919,082	366,333,238	293,812,782	326,458,647	224,323,727	2,331,847,476	48.07%	15.71%	12.60%	14.00%	9.62%	100%
63	1,168,921,143	382,021,035	306,394,974	340,438,860	233,930,131	2,431,706,143	48.07%	15.71%	12.60%	14.00%	9.62%	100%
65	250,361,798	81,822,006	65,624,270	72,915,855	50,103,609	520,827,539	48.07%	15.71%	12.60%	14.00%	9.62%	100%
67	1,275,982,375	417,010,258	334,457,623	371,619,581	255,355,741	2,654,425,578	48.07%	15.71%	12.60%	14.00%	9.62%	100%
69	508,660,015	166,237,754	133,328,816	148,143,129	101,795,493	1,058,165,206	48.07%	15.71%	12.60%	14.00%	9.62%	100%
TOTAL	**29,297,291,815**	**9,574,796,222**	**7,679,340,064**	**8,532,600,071**	**5,863,115,192**	**60,947,143,364**	**48.07%**	**15.71%**	**12.60%**	**14.00%**	**9.62%**	**100%**

B. ADJUSTMENTS IN TUNNEL COST DUE TO GEOLOGY

Subject to verification by the Re-opener Verifier (appointed under the PPA), cost variation due to geological conditions related to tunneling works shall be allowed and accordingly paid by the Company to the Contractor. The cost of the tunneling works shall be allowed to vary depending on the category of rock encountered during construction of the tunnels but the total quantities given in the below respective tables shall not be varied and shall remain fix. The increase or decrease in the cost shall be subject to the baseline conditions given in the following tables:

Table-1 Diversion Tunnels Geological Cost Variation

Rock Class	RMR	Price (PKR/m)	Length of Tunnel (m)
Very Good Rock	>80	6,547,216	0
Good Rock	61-80	6,633,927	90
Fair Rock	41-60	6,782,310	360
Poor Rock	21-40	7,682,569	360
Very Poor	0-20	7,988,273	90
		Total Price -PKR	**6,523,354,440**

Table-2 Upstream Waterway Penstock Tunnels Geological Cost Variation

Rock Class	RMR	Price (PKR/m)	Length of Tunnel (m)
Very Good Rock	>80	2,015,097	0
Good Rock	61-80	2,071,956	65
Fair Rock	41-60	3,091,004	260
Poor Rock	21-40	3,356,806	260
Very Poor	0-20	3,511,503	65
		Total Price -PKR	**2,039,355,435**

Table-3 Downstream Waterway Tunnels Cost Variation

Rock Class	RMR	Price (PKR/m)	Length of Tunnel (m)
Very Good Rock	>80	4,965,371	0
Good Rock	61-80	5,139,488	78
Fair Rock	41-60	5,608,324	312
Poor Rock	21-40	5,714,761	312
Very Poor	0-20	6,266,236	78
		Total Price -PKR	4,422,448,992