National Electric Power Regulatory Authority
Islamic Republic of Pakistan

Registrar

NEPRA Tower, Attaturk Avenue (East), G-5/1, Islamabad
Ph: +92-51-9206500, Fax: +92-51-2600026
Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

No. NEPRA/R/LAG-520/14393-401 June 12, 2023

Chief Executive Officer
KA Power Limited
23rd Floor, Ufone Tower
Jinnah Avenue, Blue Area, Islamabad

Subject: **Grant of Generation Licence No. IGSPL/110/2023**
Licence Application No. LAG-520
KA Power Limited (KAPL)

Reference: Your letter No. nil dated 04.07.2022

Enclosed please find herewith Determination of the Authority, alongwith additional note of Mr. Mathar Niaz Rana (nsc), Member NERPA, in the matter of application of KA Power Limited (KAPL) for the grant of generation licence along with Generation Licence No. IGSPL/110/2023 annexed to this determination granted by the National Electric Power Regulatory Authority (NEPRA) to KAPL for its 238.20 MW Kalam Asrit Hydel Power Project located on River Swat, District Swat, in the province of Khyber Pakhtunkhwa, pursuant to Section-14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997/(NEPRA Amended Act 2018).

2. Please quote above mentioned Generation Licence No. for future correspondence.

Enclosure: As Above

(Engr. Mazhar Iqbal Ranjha)

Copy to:

1. Secretary, Power Division, Ministry of Energy, 'A' Block, Pak Secretariat, Islamabad
2. Secretary, Energy & Power Department, Government of Khyber Pakhtunkhwa, 1st Floor, A-Block, Abdul-Wali Khan Multiplex, Civil Secretariat, Peshawar.
3. Managing Director, National Transmission & Despatch Company (NTDC), 414 WAPDA House, Lahore
4. Chief Executive Officer, CPPA(G), 73 West, Shaheen Plaza, A.K. Fazl-ul-Haq Rd, Blue Area, Islamabad
5. Chief Executive Officer, Peshawar Electric Supply Company, 166 WAPDA House, Shami Road, Peshawar
6. Director General, Environmental Protection Agency (EPA), 3rd Floor, Old Courts Building, Khyber Road, Peshawar
7. Managing Director, Private Power & Infrastructure Board (PPIB), Ground & 2nd Floors, Emigration Tower, Plot No. 10, Mauve Area, Sector G-8/1, Islamabad
8. Chief Executive Officer, Pakhtunkhwa Energy Development Organization, PEDO House, 38/B-2, Phase-V, Hayatabad, Peshawar

National Electric Power Regulatory Authority (NEPRA)

Determination of the Authority in the Matter of Application of KA Power Limited for the Grant of Generation Licence

June 12th, 2023
Case No. LAG-520

(A). Background

(i). Pakistan is blessed with such a topography that its province of Khyber Pakhtunkhwa offers a huge potential for the development of electric power using its water resources.

(ii). In order to harness hydropower potential in the province, the Government of Khyber Pakhtunkhwa has set up Pakhtunkhwa Energy Development Organization (PEDO). In this regard, the Provincial Government has formulated the "Khyber Pakhtunkhwa Hydropower Policy 2016" (hereafter called the KPK Hydropower Policy) to encourage and ensure exploitation of indigenous resources. In consideration of the said, PEDO has issued Letter of Intent (LoI) to different entrepreneurs/power developers as Independent Power Producers [IPP(s)] on Build-Own-Operate-Transfer (BOOT) basis. One such LoI was issued to Korea South East Power Company (KOEN/"Main Sponsor"). The said LoI envisaged setting up approximately 197.0 MW Kalam Asrit Hydel Power Project at Swat River, District Swat in the province of Khyber Pakhtunkhwa. According to the terms and condition of LoI, the sponsors of the project carried out detailed feasibility study of the project including technical study, environmental study, financial study etc.

(iii). Further, the sponsors of the project incorporated Special Purpose Vehicle (SPV) in the name of KA Power Limited (KAPL) and approached the Authority for the grant of generation licence.

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(B). Filing of Application

(i). KAPL submitted an application on July 05, 2022 for the grant of generation licence in terms of Section-14B of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act") read with the relevant provisions of the NEPRA Licensing (Application, Modification, Extension and Cancellation) Procedure Regulations, 2021 (the "Licensing Regulations").

(ii). The Registrar examined the submitted application and found that KAPL has complied with the requirement of the required documents and information as stipulated in Regutation-6(2) of the Licensing Regulations. Accordingly, the Registrar allocated Registration No. LAG-520 to the application of KAPL and published in two daily newspapers i.e. in one (01) Urdu and one (01) English newspapers on August 05, 2022, containing a brief summary of the particulars of the. project for which licence has been sought, inviting the general public to submit their comments in the matter as stipulated in Regulation-7 of the Licensing Regulations.

(iii). In addition to the above, letters were sent to different stakeholders in terms of Regulation-9(2) of the Licensing Regulations for seeking their comments for assistance of the Authority as per the approved list on August 05, 2022.

(C). Comments of Stakeholders

(i). In reply to the above, the Authority received comments from four (04) stakeholders. These included PEDO, Central Power Purchasing Agency (Guaranteed) Limited (CPPA-G), Energy Department of Government of Punjab (EDGoPb) and Indus River System Authority (IRSA). The salient points of the comments offered by the above stakeholders are summarized below:-

(a). PEDO stated that it has issued LoI to KOEN on April 24, 2018 for conducting feasibility study for development of Kalam Asrit Hydel Power Plant (HPP). The company completed the said study and Panel of Experts (PoE) of PEDO approved it on April 06, 2022 therefore, the Authority may consider the grant of generation licence to KAPL;

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(b). CPPA-G submitted that the regulatory requirements for issuance of generation licence are envisaged in the NEPRA Licensing (Generation) Rules, 2000 (the "Generation Rules"). In this regard, Rule-3(5) of the Generation Rules stipulates that the project must satisfy the 'least cost option criteria'. In this regard, the company has not submitted approval of the Grid Interconnection Study (GIS). The project is located in the territory of Peshawar Electric Supply Company Limited (PESCO) and its comments on GIS must be obtained being the relevant distribution company however, the same are not attached with the application. Further, NTDC and PESCO in case of another IPP i.e. 215 MW Asrit Kedam HPP commented that the integrated study for evacuation of power from HPPs in Swat valley at 220 kV and 132 kV voltage levels which is being carried out by PEDO which has not been completed yet. Therefore, it is clear that the approval of GIS report is subject to the completion and acceptance of an integrated study in the region in consultation with all relevant stakeholders. Rule-3(2) of the Generation Rules requires an entity filing an application for grant of generation license to satisfy the Authority that the proposed generation facility has interconnection arrangement in place and that it meets the technical limits/specifications with respect thereto. It states that: "*The location, size, technology, interconnection arrangements, technical limits, technical functional specifications and other details specific to the generation facilities of the licensee shall be set out in a schedule to the generation licence*". The significance of interconnection arrangement is also evident from Rule 3(5)(e) of the Generation Rules and various previous decisions of the Authority stating that approval of GIS and issuance of Power Evacuation Certificates by NTDC/PESCO are necessary in processing and implementing the projects, specifically the renewable projects, so that the stability of the national grid is ensured, and the provisions of the Grid Code are strictly followed. It is pertinent to mention that NTDC had submitted similar comments during processing of application of Uzghor

Hydro Power Company (Private) Limited (UHPCPL) for grant of generation licence that an integrated study is required to be conducted for Chitral region. However, the Authority approved the grant of licence to UHPCPL considering that the development of corridor will help in meeting the additional capacity requirements in long term and short-term scenario. It is further highlighted that eligibility criteria is provided in Regulation-5(2) of Licensing Regulations which stipulates that the Authority may decline to issue a licence if the Authority determines that the investments associated with the facility or system are not justifiable in view of needs of the electric power industry or where the applicant has failed to demonstrate, in the opinion of the Authority the existence of the demand for the proposed facility or system. In consideration of the said, the project has failed to satisfy regarding the existence of demand for the proposed facility in the application. As per PC-4 of the Grid Code, which states that Indicative Generation Capacity Expansion Plan (IGCEP) shall identify new capacity requirements and the same shall be subject to review and approval of the Authority. In this regard, the Authority approved IGCEP 2021-30 in September 2021 wherein the project of KAPL was considered as candidate project. NTDC had informed that the company that it shall have to compete with other candidate power projects to become part of IGCEP in future as per least cost principle. As per Regulation-3(4)(f) of Licensing Regulation, a detailed feasibility study is required to be conducted and same shall also be approved by the PoE of LoI issuing entity. PEDO has approved the feasibility study of the project without taking responsibility of reliability of data, contents and conclusions given in the feasibility study which has been carried out at the risk & cost of the sponsor, the approval of the study shall not form basis of any claim for compensation from Govt. of Khyber Pakhtunkhwa/PEDO in future. The said decision reflects that the authenticity of the hydrology data, Plant Factor and Capacity is not owned by PoE. Therefore, at this stage if nothing can be substantiated, then the risk of capacity payment (fixed cost) may

not be shifted to the consumer. CPPA-G is of the view that water meters should be installed at project site on and before the start of feasibility study and the data obtained from them as well as historical data together should be used by the consultant of the project, in order to substantiate the capacity and plant factor of the project. As per the Section 5.1.10 of the National Electricity Policy 2021, "Subject to Article 157(2) of the Constitution, the Provincial Government may make their own electricity policies (including generation, transmission and distribution) and execute related project within their boundaries without the requirement of selection in IGCEP, as long as such projects are not connected to the national grid and do not impose any obligation on the Federal Government entity. Such projects can subsequently be connected to the national grid, subject to the consent of the Federal Government, based on the principle of least cost and selection by IGCEP." PEDO issued LoI pursuant to the Memorandum of Understanding (MoU) signed on May 15, 2017 between Government of Khyber Pakhtunkhwa with KOEN for development of the project. Therefore, the said policy provides a way forward for those power projects which are not selected in IGCEP but initiated by the Provincial Government. Further, the Authority through its decision in the matter of Motion of Leave for review filed by mentioned that project of UHPCPL however given the liberalization of power market, the projects which are not optimized in the IGCEP should now be encouraged to enter the market as Merchant Plants as per the applicable documents. Under the new regime, the company may consider setting up a power plant to sell electricity either under a bilateral contract or through a merchant plant, in the competitive trading bilateral contract market;

(c). EDGoPb supported the development of HPP with certain observations in the matter which includes: (i). the Authority has not provided information whether the project qualifies the least cost option criteria under Rule-3(5) of the Generation Rules; (ii). No information has been provided regarding GIS for the project,

whether it has been approved by PESCO or NTDC; (iii). It has also not been mentioned that which entity will the project sell electricity to i.e., to PESCO or to CPPA-G. In case of the sale of electricity to any of the mentioned entities, whether the project has received required Power Acquisition Consent. Further, has the project met all pre-requisites under NEPRA's Interim Power Procurement (Procedures and Standards) Regulations, 2005 and the Authority has approved the power acquisition request or otherwise; and (iv). the project is not included in committed projects list but is included in candidate list of hydropower project. As per current practice, the Authority only entertains the committed projects for generation license & tariff.

(d). IRSA issued No Objection Certificate (NOC) to the company for development of 238 MW Kalam Asrit HPP.

(ii). The Authority examined the above comments and in view of the observations made, considered appropriate to seek the perspective of KAPL. On the comments of CPPA-G, it has been submitted that the Authority is fully cognizant of its role for issuance of generation license and always scrutinize all regulatory requirements prior to its issuance. The company is also complying all possible requirements and has already provided the required information as required under the rules and regulations and shall be pleased to provide any further information. Regarding least cost option criteria, the company submitted that its project is the most economical source of energy using indigenous resource and environment friendly. It is fully aware of its responsibility to develop the project on least cost basis and same has been duly catered for in feasibility study of the project and the EPC contractor will be appointed through International Competitive Bidding as envisaged in the relevant regulations. The costs of the project is comparable to the other hydropower projects. The hydropower projects are of strategic importance both economically as well in terms of energy security.

(iii). Further to the above, KAPL submitted that the project is an important indigenous resource conceived by Federal and Provincial Government. In order to tap the said resource and to attract foreign direct investment, PEDO issued a LoI to KOEN under KPK Hydropower Policy and Power Generation, 2015 of Federal

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Government, a foreign state-owned entity for development of 238 MW Kalam-Asrit hydropower project. The said LoI was shared with all stakeholders including CPPA-G. After issuance of LoI, the Sponsors spent hefty amount to conduct Feasibility Study supervised by PoE appointed by PEDO representing all stakeholders who approved the Feasibility Study following strict due diligence and cost analysis of the Project. The company intends to sell electricity to CPPA-G, being the only Power Purchaser of electricity in the prevailing power policies of Federal and Provincial government. Further, the issuance of generation licence is also important as the Authority has decided to entertain the tariff petition of only those projects which are having valid generation licence. About the optimal utilization of resources, it has been submitted that detailed optimization was conducted with different alternatives being part of the feasibility study and conclusion was reached with the recommendation of PoE accordingly, the Feasibility Study was approved.

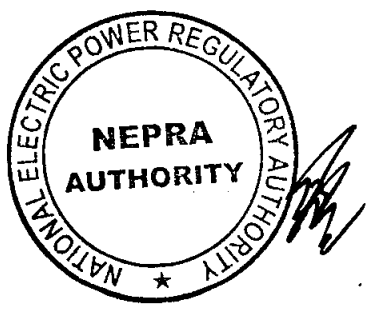
(iv). On the constraints of the transmission system, KAPL stated that the project is located on Swat River cascade (severally affected by recent flooding) and three projects on the same cascade namely (Madyan, Gabral Kalam and Matiltan hydropower projects) were already mentioned in IGCEP 2021-30 while an integrated study for the cascade is already in process and the same is in advanced stage. Therefore, Kalam-Asrit HPP and Asrit Kedam HPP together would make this transmission line fully utilized and viable while the NTDC or Provincial Grid Company are under obligation to complete the said transmission line in timely manner under National Electricity Policy 2021.

(v). KAPL further submitted that it is cognizant of the importance of the GIS therefore, started work proactively on the same. It collected the required data from NTDC for the study and completed the same in the early manner and submitted to the NTDC as well as PESCO and PEDO for their approval/comments. In this regard, the comments of NTDC for 215 MW Asrit Kedam are relevant which states that the approval is pending due to the integrated study which is under progress by PEDO. Therefore, the same scenario applies to the 238 MW Kalam Asrit as the project is part of said integrated study of PEDO.

(vi). It was also highlighted that various projects are under progress/planned on the Swat River (some are in construction stage and/or at start of construction) and are listed in IGCEP which are required to be connected to the national grid, therefore,

interconnection facility across the Swat River is inevitable. For the said purpose, an integrated study is in process which will be completed shortly. However, holding the issuance of generation licence at this stage would halt the whole process of development of an important hydel power project which is planned to be completed by 2029-30. The company considers that the approval of GIS is not the pre-requisite under Rule-3(2) of the Generation Rules and requirement set out thereunder has already been fulfilled by providing the necessary information in the application and the GIS. The said provision does not restrict the Authority to grant generation licence in the absence of NTDC's comments whereas comments of the relevant quarters shall be entertained in due course of time.

(vii). KAPL submitted that the Authority has already granted generation license to various projects including Uzghor HPP and Sharmai HPP without formal approval of the GIS. In this regard, the company appreciates the understanding of the Authority which enable the projects to proceed with its development process in an efficient manner. Regarding eligibility criteria provided in Regulation-5 of the Licensing Regulations, KAPL appreciated the significance of requirement of capacity expansion and IGCEP which is being developed by the relevant authorities however, the company would like to highlight that it is not the IGCEP which will determine the Projects to be completed within certain period but it's the Project viability and costing which is basis to be part of IGCEP i.e. unless the data regarding completion of the Project along with its tariff is provided for IGCEP, it is not possible that the project shall be captured under IGCEP. Therefore, it is more important to become part of IGCEP so that the development process keeps rotating and generation licence is one of the important milestones in the development of the project. In addition, it is to be appreciated that hydro projects are also time sensitive and any hindrance in the early stage can result in the more delays in the completion of the project which is not beneficial for the country as well as investors. Keeping in view of the above, the international investors should not be discouraged at the initial stage of the development by holding the generation licence tilt the finalization of IGCEP. KAPL is confident that the project shall be part of IGCEP as optimized project to be completed by 2030. The Authority granted generation licences to Turtonas-Uzghor HPP, Sharmai HPP, Shigo-Kas HPP etc. without inclusion in IGCEP.



(viii). On the approval of feasibility study, KAPL submitted that the same is approved after complete due diligence by the PoE however, the company believes that the approval statement is standard language and similar statement can be noted from other projects approved by any PoE. The recent approvals by PoE of PPIB and PEDO for Mahl, Tortunus, Sharmai, Athmuqam etc witness the similar statements in their approval letters while CPPA-G has misinterpreted by linking it with the concluded capacity and plant factor. Regarding the optimal utilization of resources, the detailed optimization was conducted with different design flows, size of structures, resultant cost and tariff as part of the feasibility study and conclusion was reached with the recommendation of PoE accordingly. Therefore, the PoE has confirmed the capacity and plant factor through its approval and has not disowned the capacity and plant factor.

(ix). KAPL remarked that the feasibility study is based on the historical hydrology data of 50 years (from 1961 to 2010), observed at the Kalam gauging station maintained by Surface Water Hydrology department of WAPDA. Being responsible sponsors and as suggested by POE before start of Feasibility Study, 2 gauging stations, Pashmal (upstream of the dam) and Minkial (downstream of the dam) gauging station/water metering system were installed in 2019 by the Project Sponsors to collect the latest data which are still operational. The project used the data from newly installed system to substantiate/ validate the historical data and determined the resultant capacity and plant factor. It is to be appreciated that five hydropower projects have already been developed on the similar historical data. Further, all future hydro projects in the IGCEP have also been planned on the similar historical data.

(x). On the comments of CPPA-G pertaining to development of HPPs by Provincial Government in isolation without IGCEP and obligation on Federal Government under 5.1.10 of National Electricity Policy 2021, it has been submitted that such development model would only be applicable after formation of provincial grids and in presence of provincial power purchaser. Subsequently, Provinces will form bankable electricity policies to attract foreign investment to tap its resources. Prior to above referred development, federal entities should consider KPK Hydropower Policy 2016 and Power Generation Policy 2015 as Clause 5.1.9 of the National Electricity Policy 2021 provides that the Power Generation Policy 2015

should continue to remain in field till the same is superseded by a revised generation policy to be approved by CCI. KAPL re-iterated that KOEN, is the international investor and has already completed a hydropower project under Power Policy 2002 and has further showed interest to invest on the similar concessions as are available including but not limited to GOP Guarantee. With huge foreign investment and without such concessions, for the international investor, the project would be unviable. In view of the said, KAPL requested the Authority to grant the generation license to enable the Project to proceed further with the development as it will be developed through 100% foreign investment which shall create opportunities in the under-developed area.

(xi). Regarding comments of EDGoPb, it has been remarked that the project fulfils the least cost option criteria as explained above. Further, KAPL submitted that Kalam Asrit HPP has been optimized by PLEXOS in the approved IGCEP 2022-31 and the same is envisaged to be commissioned in 2029-30. The company has carried out the GIS of the project and submitted the same to NTDC for approval however, it was informed that the PEDO is conducting an integrated study of all hydel power projects in Swat corridor which also include this project. Therefore, NTDC will submit its comments once the said study is completed in consultation with all stakeholders including NTDC, PESCO and PEDO. As per the existing regime, the power generated from the generation facility shall dispersed to the national grid and will be sold to CPPA-G which is acting as an agent on behalf of all X-WAPDA DISCOs. Regarding consent of power purchaser, it has been submitted that the same is not a pre-requisite for the grant of generation licence. The project has already been optimized in IGCEP 2022-31 as explained above therefore, the same is eligible to be entertained for consideration of the grant of generation licence.

(xii). The Authority considered the above submission of KAPL and considered it appropriate to proceed further in the matter as stipulated in the Licensing Regulations and the Generation Rules.

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(D). Evaluation/Findings

(i). The Authority has reviewed the submissions of KAPL including the information provided in its application for the grant of generation licence, comments of the stakeholders and the rejoinder in the matter. Further to the said, the Authority has also considered the NEPRA Act, Feasibility Study of the project and Environmental Impact Assessment (EIA) of the project and the relevant rules & regulations.

(ii). The Authority has observed that according to Section-14(B)(5) of the NEPRA Act the Federal Government was to notify a mechanism for gradual cessation of the generation licences for various classes of generation licence holders not to be extended beyond a period of five years from the coming into effect of the Amendments of 2018 in the NEPRA Act. In this regard, the Authority considers that the said period has expired on April 26, 2023. However, the Authority is of considered opinion that as the application of KAPL was submitted before the said date therefore, to avoid any regulatory gap there is a case for the grant of generation licence.

(iii). The Authority has observed that following successful development of 102 MW Gulpur Hydropower Project in Azad Jammu & Kashmir, KOEN offered and initiated 100% foreign direct investment of around USD 1 billion in Khyber Pakhtunkhwa province including the Kalam Asrit HPP and executed a Memorandum of Understanding on May 15, 2017 with the Government of Khyber Pakhtunkhwa. Under the provisions of KPK Hydropower Policy and Guidelines issued thereunder, KOEN submitted Preliminary Proposal on May 24, 2017 and in response KPK through PEDO issued a Notice to Proceed to KOEN on October 05, 2017. KOEN submitted the detailed proposal against the Qualification Documents issued by PEDO under the provisions of KPK Hydropower Policy. After detailed scrutiny of Proposal, KOEN was declared as successful applicant for the development of 197 MW Kalam Asrit HPP through a NOC letter dated March 26, 2018. Following NOC, Bank guarantee was submitted and PEDO issued LoI to KOEN for the project as raw site on April 24, 2018. It is pertinent to mention that KOEN is the premier State-Owned company of Republic of Korea and is a leading generation company of South Korea which owns 11.4% of total Korea's generation capacity amounting to 10,376 MW. The total asset base of KOEN is USD 10.342 billion with approx. USD 4 billion per annum revenue. With the experiences in 24 power plants construction and operation worldwide, KOEN is

expanding its business portfolio worldwide such as USA, Rumania, Bulgaria, Malaysia, Indonesia, Nepal, Hungary, Turkey, Kazakhstan, Sri Lanka, China, Thailand and Pakistan.

(iv). The Authority has noted that the applicant company (i.e. KAPL) is a public limited company incorporated on April 08, 2022 under Section-16 of the Companies Act, 2017 (XIX of 2017) having Corporate Universal Identification No. 0199665. The registered/business office of the company is located at 7C, Sector G-8 Markaz, Islamabad. According to the Memorandum of Association, the principal line of business of the company, *inter alia*, includes, generating, supplying, distributing, purchasing, importing electricity and to perform all other acts which are necessary or incidental to business of hydel power generation, supply & transmission of electric power. According to the submitted information, the total outlay of the project will be approximately U.S. $ 489.33 million which will be financed through a combination of debt (U.S. $ 391.464 million) and equity (U.S. $ 97.866 million) in a ratio of 80:20. In this regard, KOEN has planned to get Lending amount through international financial institutions like Asian Development Bank, International Finance Corporation, Korean Export Import Bank and CDC UK based on its precedent investment in Gulpur HPP.

(v). The Authority has observed that the project of Kalam Asrit HPP was initially identified by German Agency for Technical Cooperation (GTZ) during a hydropower potential study conducted between 1990-1995 under a Program of Pakistan German Cooperation. GTZ study identified four medium sized hydropower projects including along the 50 Km reach of upper Swat River. Kalam Asrit HPP with a potential of 197 MW was one of amongst identified sites. After the award of LoI, KOEN conducted a competitive bidding process for selecting renowned international engineering firm, for carrying out the bankable feasibility study of Project and selected SAMAN Corporation of South Korea (SAMAN) & Mott MacDonald of United Kingdom. SAMAN conducted and completed the feasibility in 2020 and following extensive review of PoE including representative from PPIB, NTDC, Irrigation Department and EPA, the feasibility study was approved on April 06, 2022. As per findings of the Feasibility Study, the potential installed capacity of the Project has increased from 197MW to 238.20 MW.

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(vi). As explained above, KAPL has submitted the current application for the grant of generation licence for its project of Kalam Asrit HPP which is a 238.20 MW Run of River based HPP proposed to be developed on Swat River, District Swat in the province of Khyber Pakhtunkhwa. The project is located on the Swat River across from the Kalam to the Asrit villages in District Swat. The intake structure is located three approx. 2 Km downstream of the confluence of Gabral River and Ushu River. The proposed location for the powerhouse is 500 m upstream of the Asrit village before reaching the confluence of Asrit Khwar and Swat River. The proposed headrace tunnel is proposed on the right side of Swat river, straight down to the village Asrit. According to the feasibility study of the project, the proposed hydropower has main components including: (a). Gated weir structure near Kalam village; (b). Natural desander between Debris dam (U/S Coffer dam) and Weir (c). Bypass Tunnel (Diversion Tunnel); (d). Power Intake in the right bank adjacent to Headrace tunnel (e). Headrace tunnel with a length of around 12 km; (f). Surge shaft; (g). Vertical pressure shaft; (h). Horizontal pressure tunnel; (i). Steel penstock & branches; (j). Surface type powerhouse; and (k). Tailrace channel.

(vii). The total installed capacity of the HPP is 238.20 MW consisting of four (04) Vertical axis Francis turbines (68.4x3 + 33.0 MW). The said capacity of the project has been optimized keeping in view the design discharge of 120 m^3/s. The Kalam Asrit HPP is a high head (gross head of 222.1 m and net head 204 m) Run of River based project with mean annual energy of approximately 945.80 GWh at plant factor of 45.37%. The project is in advanced stage and is expected to be completed by July, 2029. It is pertinent to mention that Kalam Asrit HPP is already included in approved IGCEP 2022-31 as an optimized project having expected commissioning date of July 2029.

(viii). Regarding GIS of the project, the Authority has observed that now KAPL through its consultant Power Planners International has carried out GIS for evacuation of power from Kalam Asrit HPP which referred to integrated study for seventeen (17) HPPs which will be connected to the national grid. According to the said study, the interconnection arrangement will consist of: (a). 132 kV Rail double circuit, carrying power from Artistic-II HPP to Gorkin-Matiltan HPP; (b). A 132 kV twin Bundle Rail double circuit, carrying power accumulated at Matiltan HPP to Gabral Kalam HPP; (c). A 132 kV Rail double circuit carrying power from Gabral Utror HPP

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and Bankhwar HPP to Gabral Kalam HPP; (d). A 132 kV twin bundle Twin Bundle Rail circuit, carrying power accumulated at Gabral Kalam HPP to the collector and generating station of Kalam Asrit HPP; (e). A 220 kV Quad Bundle Rail double circuit of around 110 km length, carrying power from Kalam Asrit HPP to Chakdara-New grid station, with Chokel Khwar HPP and Kalam Asrit HPP and Madyan HPP looped in-out at the circuit; (f). A 132 kV Rail double circuit carrying power from Kedam Khwar HPP, Daral Khwar-II HPP and the existing Daral Khwar HPP to 132 kV Madyan grid station. In this regard, KAPL submitted the said study to PESCO and NTDC for approval. However, NTDC and PESCO are of the view that the integrated study for evacuation of power from HPPs in Swat valley at 220 kV and 132 kV voltage levels which is being carried out by PEDO has not been completed yet and it also include the Kalam Asrit HPP therefore, they will comment once the same is finalized. It is relevant to mention that the Authority has granted conditional generation licences to UHPCPL and PEDO for its Lawi HPP due to non-availability of even draft GIS whereas, in the instant case KAPL has already submitted the draft study therefore, the Authority considers that the same treatment may be adopted and directs KAPL to apply for Licensee Proposed Modification (LPM) if there is any change in the interconnection arrangement duly approved by PESCO and NTDC.

(ix). The Authority has observed that the proposed project, for which generation licence is being sought, is based on RE source and does not cause pollution as in the case of conventional power plants. However, the operation of the generation facility/HPP may cause soil pollution, water pollution and noise pollution during construction and operation. In this regard, the Authority has observed that KAPL carried out the Environment Impact Assessment (EIA) study for the project and submitted the same for the consideration and approval of Environmental Protection Agency, Government of KPK (EPAGoKPK). In this regard, EPAGoKPK had already issued a No Objection Certificate (NOC) to the company for the construction of the project.

(x). In terms of Rule-3 of the Generation Rules, the Authority may grant a generation licence to any person to engage in the generation business. The said rule stipulates various conditions pertaining to the grant of generation licence as explained in Rule-3(2), Rule-3(3), Rule-3(4) and Rule-3(5) of the Generation Rules. In the particular case under consideration, the Authority considers that conditions of Rule-

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3(2) and Rule-3(3) stand satisfied as KAPL has provided details of location, technology, size, net capacity/energy yield, interconnection arrangements, technical limits, technical functional specifications and other details specific to the generation facility/hydel Power Plant. The provision of Rule-3(4) of the Generation Rules regarding holding a public hearing is not applicable as there was no issue which required this exercise.

(xi). The Rule-3(5) of the Generation Rules stipulates that the Authority may refuse to issue a generation licence where the site, technology, design, fuel, tariff or other relevant matters pertaining to the generation facility proposed in an application for a generation licence are either not suitable on environmental grounds or do not satisfy the least cost option criteria. In this regard, the Rule-3(5) of the Generation Rules also stipulates the conditions pertaining to least cost option criteria which include (a). sustainable development or optimum utilization of the renewable or non-renewable energy resources proposed for generation of electric power; (b). the availability of indigenous fuel and other resources; (c). the comparative costs of the construction, operation and maintenance of the proposed generation facility against the preferences indicated by the Authority; (d). the cost and right-of-way considerations related to the provision of transmission and interconnection facilities; (e). the constraints on the transmission system likely to result from the proposed generation facility and the costs of the transmission system expansion required to remove such constraints; (f). the short-term and the long-term forecasts for additional capacity requirements; (g). the tariff resulting or likely to result from the construction or operation of the proposed generation facility; and (h) the optimum utilization of various sites in the context of both the short-term and the long-term requirements of the electric power industry as a whole. In consideration of the above, the Authority considers that the proposed project will result in optimum utilization of the RE of the province of Khyber Pakhtunkhwa which is untapped, resulting in pollution free electric power. Further, the PLEXOS software has optimized the project based on least cost option criteria and the same is included in the approved IGCEP 2022-31.

(xii). As explained in the preceding paragraphs, the sponsor of the project carried out the GIS which concludes that the project will not face any constraints in transmission system. Further, being located at reasonable distance from the thin population of the area, the project will not likely result in cost and right-of-way issues

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for the provision of transmission and interconnection facilities. In view of the said, the Authority considers that the project of KAPL fulfills the eligibility criteria for grant of generation licence as stipulated in the NEPRA Act, rules, regulations and other applicable documents.

(E). Grant of Generation Licence

(i). The sustainable and affordable energy/electricity is a key prerequisite for socio-economic development of any country. In fact, the economic growth of any country is directly linked with the availability of safe, secure, reliable and cheaper supply of energy/electricity. In consideration of above and reasons explained in the preceding paragraphs, the Authority is of the considered opinion that for sustainable development, all indigenous power generation resources including hydel must be developed on priority basis.

(ii). The existing energy mix of the country is heavily skewed towards the thermal power plants, mainly operating on imported fuel. The import of fuel for electric power generation not only causes depletion of the precious foreign exchange reserves of the country but is also an environmental concern. Therefore, in order to achieve sustainable development, it is imperative that indigenous resources are given priority for power generation and their development be encouraged. The Authority considers that the proposed project of KAPL will not only help in diversifying the energy portfolio of the country but will also result in enhancing the energy security of the country by reducing the dependence on imported fuel but and thus help in reduction in carbon emission by generating clean electricity, thus improving the environment.

(iii). The Rule-5(1) of the Generation Rules stipulates that the term of a generation licence is to be consistent with the maximum expected useful life of the units comprised in a generating facility, except where an applicant consents to a shorter term. According to the information provided by KAPL, its generation facility/HPP will achieve Commercial Operation Date (COD) by July 31, 2029 and will have a useful life of more than thirty (30) years from its COD. In this regard, KAPL has requested that the term of the proposed generation licence may be fixed as thirty years. In consideration of the said, the Authority considers that the submissions of KAPL are in line with the industry standards and norms. In view of the said and

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considering the fact that KAPL has consented for a shorter term of thirty (30) years, the Authority fixes the term of the proposed generation licence as thirty (30) years from COD of the project, subject to the Section-14B of the NEPRA Act.

(iv). Regarding the tariff, it is hereby clarified that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate and charges etc. is the sole prerogative of the Authority. In this regard, KAPL in terms of the relevant provisions of the relevant rules will be filing a petition for determination of tariff of the project. In view of the said, the Authority considers it appropriate to direct KAPL to charge the power purchaser only such tariff which has been determined, approved or specified by the Authority. In view of the said, Authority decides to include a specific article in the generation licence and directs KAPL to adhere to the said in letter and spirit without any exception.

(v). About the compliance with the environmental standards, as discussed in the preceding paragraphs, KAPL has provided the NOC from EPAGoKPK and has confirmed that the project will comply with the required standards during the term of the generation licence. In view of the importance of the issue, the Authority has decided to include a specific article in the generation licence along with other terms and conditions making it obligatory for KAPL to comply with relevant environmental standards at all times. Further, the Authority directs KAPL to submit a report on a bi-annual basis, confirming that operation of its generation facility is compliant with the required environmental standards as prescribed by the concerned environmental protection agency. As the proposed generation facility/HPP of KAPL will be using hydel source for generation of power, therefore the project may qualify for the Carbon Credits. In this regard, an article for carbon credits and sharing its proceeds with the power purchaser has been included in the generation licence.

(vi). Regarding GIS of the project as explained above, the hydel project of KOAKPL will be located in district Swat in the province of Khyber Pakhtunkhwa where a number of hydel projects proposed by different agencies are in various stages of implementation. In this regard, the dispersal of electric power from the proposed projects is to be considered in a consolidated manner instead of an individual project. In consideration of the said, the Authority has observed that PEDO has conducted the required study and the same is in process of approval from PESCO and NTDC. In view of the said, the Authority directs KAPL to apply for modification as per the relevant regulations once GIS is finalized and approved by the relevant agency to

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reflect the same in its generation licence. The Authority also directs KAPL not to start any physical work on the project unless it has the approval of GIS duly incorporated in the generation licence and executed the concessional documents for the project.

(vii). The Authority has duly considered the comments of different stakeholders as explained above. In this regard, the Authority has observed that CPPAGL have raised various concerns on the application of KAPL which includes: (a). GIS Approval; (b). selection of project in the IGCEP; and (c). remarks of the PoEs on data for approval of the Feasibility Study. In the context of GIS, it has been submitted that although sponsored have carried out the said study but the same has still not been approved by PESCO and NTDC. In this regard, the issue of approval of GIS was highlighted on a number of occasions in earlier cases including Uzghor HPP and Lawi HPP on which Authority decided that despite lack of approval of GIS, it will grant generation licences based on the preliminary information provided in the application. However, if at same stage there is change in the interconnection arrangement, the licensees will be required to get the licence modified/amended to reflect that changes.

(viii). On the observation of CPPA-G that the project of KAPL is not part of the IGCEP, the Authority clarifies that in the earlier version of IGCEP 2021-30 the project was not included in the same. But in the recent approved version of IGCEP 2022-31, Kalam Asrit HPP has been optimized with commissioning date in the year 2029 therefore, the said observation of CPPA-G is no more valid. Further, CPPA-G has shown concern that while approving the Feasibility Study, PoEs have not taken responsibility of reliability of data in the said study and the same is at risk and cost of the sponsor. In consideration of the above, the Authority considers that the wording used for the approval of Feasibility Study is a standard one and the same is reflected in all the other approvals granted for similar projects wherein, the responsibility of the PoEs is only to supervise the conduct of the said study. In view of the said, all observations of CPPA-G stands addressed.

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(ix). In view of the above, the Authority hereby approves the grant of Generation Licence to KAPL on the terms and conditions set out in the generation licence annexed to this determination. The grant of generation licence will be subject to the provisions contained in the NEPRA Act, relevant rules, regulations framed thereunder and other applicable documents.

Authority

Maqsood Anwar Khan
(Member)

Rafique Ahmed Shaikh
(Member)

Mathar Niaz Rana (nsc)
(Member)

Amina Ahmed
(Member)

Tauseef H. Farooqi
(Chairman)

* My additional note

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Additional Note

1. My understanding is that grant of generation license does not entitle any sponsor to a specific type of tariff, right to procurement of power or power evacuation, as these matters are decided under relevant regulations and policies separately. For the type of tariff, for example, a separate public hearing will be held for which issues will be framed and placed for public debate or discussion giving opportunity to the sponsor to plead their case.

Mathar Niaz Rana (nsc)
Member Tariff and Finance

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National Electric Power Regulatory Authority
(NEPRA)
Islamabad – Pakistan

GENERATION LICENCE

No. IGSPL/110/2023

In exercise of the powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section-14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997/Amendment Act, 2018, the Authority hereby grants a Generation Licence to:

KA POWER LIMITED

Incorporated Under Section-16
of the Companies Act, 2017 (XIX of 2017) Having Corporate Universal Identification No. 0199665, dated April 08, 2022

for its Hydel Based Generation Facility/Kalam Asrit Hydel Power Project Located on River Swat, District Swat in the Province of Khyber Pakhtunkhwa

(Total Installed Capacity: 238.20 MW Gross)

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

Given under my hand this on 12th day of June Two Thousand & Twenty Three and expires on 30th day of July Two Thousand & Fifty Nine.

Registrar

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Article-1
Definitions

1.1 In this licence

(a). "Act" means the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 as amended from time to time;

(b). "Applicable Documents" means the rules and regulations framed by the Authority under the Act, any documents or instruments issued or determinations made by the Authority under any of the foregoing or pursuant to the exercise of its powers under the Act, the Grid Code, the applicable Distribution Code, the Commercial Code, or the documents or instruments made by the Licensee pursuant to its generation licence, in each case of a binding nature applicable to the Licensee or, where applicable, to its affiliates and to which the Licensee or any of its affiliates may be subject;

(c). "Applicable Law" means all the Applicable Documents;

(d). "Authority" means the National Electric Power Regulatory Authority constituted under Section-3 of the Act;

(e). "Bus Bar" means a system of conductors in the generation facility/Hydel Power Plant of the Licensee on which the electric power from all the generators is collected for supplying to the Power Purchaser;

(f). "Carbon Credits" means the amount of Carbon Dioxide (CO_2) and other greenhouse gases not produced as a result of generation of electric energy by the generation facility/Hydel Power Plant and other environmental air quality credits and related emissions reduction credits or benefits (economic or otherwise) related to the generation of electric energy by the generation facility/Hydel Power

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Plant, which are available or can be obtained in relation to the generation facility/Hydel Power Plant after the COD;

(g). "Commercial Code" or "Market Commercial Code" means the commercial code prepared and maintained by the market operator pursuant to sections 23A and 23B of the Act and approved by the Authority, from time to time;

(h). "Commercial Operations Date (COD)" means the day immediately following the date on which the generation facility/Hydel Power Plant of the Licensee is commissioned;

(i). "Commissioning" means the undertaking of the Commissioning Tests of the generation facility/Hydel Power Plant as stipulated in the PPA;

(j). "CPPA-G" means Central Power Purchasing Agency (Guarantee) Limited or any other entity created for the like purpose;

(k). "Distribution Code" means the code prepared by the concerned Distribution Licensee and approved by the Authority, which defines the technical and operational standards and procedures for Distribution Licensees and all those connected to its system as may be revised from time to time with necessary approval of the Authority;

(l). "Distribution Licensee" means the a person to whom a licence for distribution of electric power has been granted by the Authority under the Act;

(m). "Generation Rules" means the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000 as amended or replaced from time to time;

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(n). "Grid Code" means the code prepared by the national grid company and approved by the Authority or, when a separate entity is licensed as system operator, prepared by the system operator licensee under sections 23H of the Act and approved by the Authority;

(o). "Hydel Power Plant " means a generation facility for production of electric power using water as source;

(p). "IEC" means "the International Electro-technical Commission or its successors or permitted assigns;

(q). "IEEE" means the Institute of Electrical and Electronics Engineers or its successors or permitted assigns;

(r). "Licensee" means **KA Power Limited** or its successors or permitted assigns;

(s). "Licensing Regulations" mean the National Electric Power Regulatory Authority Licensing (Application, Modification, Extension and Cancellation) Procedure Regulations, 2021 as amended or replaced from time to time;

(t). "Net Delivered Energy" means the net electric energy expressed in kWh generated by the generation facility/Hydel Power Plant of the Licensee at its outgoing Bus Bar and delivered to the Power Purchaser;

(u). "NTDC" means National Transmission and Despatch Company Limited or its successors or permitted assigns;

(v). "PEDO" means Pakhtunkhwa Energy Development Organization or its successors or permitted assigns;

(w). "PESCO" means Peshawar Electric Supply Company Limited or its successors or permitted assigns;

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(x). "Power Purchaser" means a person or registered entity/licence holder which will be purchasing electric power from the Licensee, pursuant to a PPA for procurement of electric power;

(y). "Power Purchase Agreement (PPA)" means the power purchase agreement, entered or to be entered into by and between the Power Purchaser and the Licensee, for the purchase and sale of electric energy generated by the generation facility/Hydel Power Plant, as may be amended by the parties thereto from time to time;

(z). "SCADA System" means the supervisory control and data acquisition system for gathering of data in real time from remote locations to control equipment and conditions;

1.2 The words and expressions used but not defined herein bear the meaning given thereto in the Act or Generation Rules and Licensing Regulations issued under the Act.

Article-2
Applicability of Law

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

Article-3
Generation Facilities

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

3.2 The net capacity/Net Delivered Energy of the generation facility/Hydel Power Plant of the Licensee is set out in Schedule-II of this licence. The Licensee shall provide the final arrangement, technical and financial specifications and other specific details pertaining to its generation facility/Hydel Power Plant before its COD.

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Article-4
Term of Licence

4.1 This licence shall become effective from the date of its issuance and will have a term of thirty (30) years from the COD of the generation facility/Hydel Power Plant of the Licensee subject to Section 14-B of the Act.

4.2 Unless suspended or revoked earlier or Licence ceases to have effect, the Licensee may apply for renewal of this Licence ninety (90) days prior to the expiry of the above term, as stipulated in the Licensing Regulations.

Article-5
Licence fee

The Licensee shall pay to the Authority the licence fee as stipulated in the National Electric Power Regulatory Authority (Fees) Regulations, 2021 as amended or replaced from time to time.

Article-6
Tariff

The Licensee shall charge only such tariff from the Power Purchaser which has been determined, approved or specified by the Authority.

Article-7
Competitive Trading Arrangement

7.1 The Licensee shall participate in such manner as may be directed by the Authority from time to time for development of a Competitive Trading Arrangement.

7.2 The Licensee shall in good faith work towards implementation and operation of the aforesaid Competitive Trading Arrangement in the manner and time period specified by the Authority. Provided that any such participation shall be subject to any contract entered into between the Licensee and another party with the approval of the Authority.

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7.3 Any variation or modification in the above-mentioned contracts for allowing the parties thereto to participate wholly or partially in the Competitive Trading Arrangement shall be subject to mutual agreement of the parties thereto and such terms and conditions as may be approved by the Authority.

Article-8
Maintenance of Records

For the purpose of sub-rule(1) of Rule-19 of the Generation Rules, copies of records and data shall be retained in standard and electronic form and all such records and data shall, subject to just claims of confidentiality, be accessible by authorized officers of the Authority.

Article-9
Compliance with Performance Standards

The Licensee shall comply with the relevant provisions of the National Electric Power Regulatory Authority Performance Standards (Generation) Rules 2009 as amended or replaced from time to time.

Article-10
Compliance with Environmental & Safety Standards

10.1 The generation facility/Hydel Power Plant of the Licensee shall comply with the environmental and safety standards in accordance with the NEPRA Power Safety Code, 2021 and such other standards as may be prescribed by the relevant competent authority from time to time.

10.2 The Licensee shall provide a certificate on a bi-annual basis, confirming that the operation of its generation facility/Hydel Power Plant is in conformity with required environmental standards as prescribed by the relevant competent authority.

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Article-11
Power off take Point and Voltage

The Licensee shall deliver the electric energy to the Power Purchaser at the outgoing Bus Bar of its generation facility/Hydel Power Plant. The Licensee shall be responsible for the up-gradation (step up) of generation voltage up to the required dispersal voltage level.

Article-12
Performance Data

12.1 The Licensee shall install properly calibrated automatic computerized recording device(s) for measuring flow of water at its generation facility/Hydel Power Plant for recording of data.

12.2 The Licensee shall install SCADA System or compatible communication system at its generation facility/Hydel Power Plant as well as at the side of the Power Purchaser.

12.3 The Licensee shall transmit the data for flows of water and power output of its generation facility/Hydel Power Plant to the control room of the Power Purchaser.

Article-13
Provision of Information

In accordance with provisions of Section-44 of the Act, the Licensee shall be obligated to provide the required information in any form as desired by the Authority without any exception.

Article-14
Emissions Trading /Carbon Credits

The Licensee shall process and obtain expeditiously the Carbon Credits admissible to the generation facility/Hydel Power Plant. The Licensee shall share the said proceeds with the Power Purchaser as per the relevant policy.

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Article-15
Design & Manufacturing Standards

The generation facility/Hydel Power Plant of the Licensee shall be designed, manufactured and tested according to the latest IEC, IEEE standards or any other equivalent standard in the matter. All the plant and equipment of generation facility/Hydel Power Plant shall be unused and brand new.

Article-16
Power Curve

The Power Purchaser shall verify the power curve of the generation facility of the Licensee, as part of the Commissioning tests according to the latest IEC/IEEE standards and shall be used to measure its performance.

Article-17
Compliance with Applicable Law

The Licensee shall comply with the provisions of the Applicable Law, guidelines, directions and prohibitory orders of the Authority as issued from time to time.

Article-18
Corporate Social Responsibility

The Licensee shall comply with the NEPRA Social Investment Guidelines, 2021, as may be amended from time to time and submit a report on its activities pertaining to Corporate Social Responsibility (CSR) on an annual basis.

Article-19
Compliance with the Cyber Security Regulations

The Licensee shall comply with National Electric Power Regulatory Authority (Security of Information Technology and Operational Technology) Regulations, 2022 as amended from time to time.

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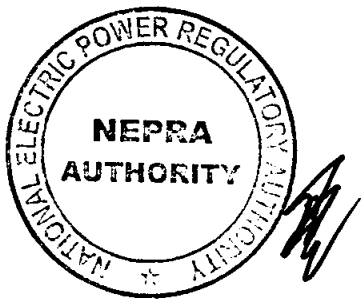
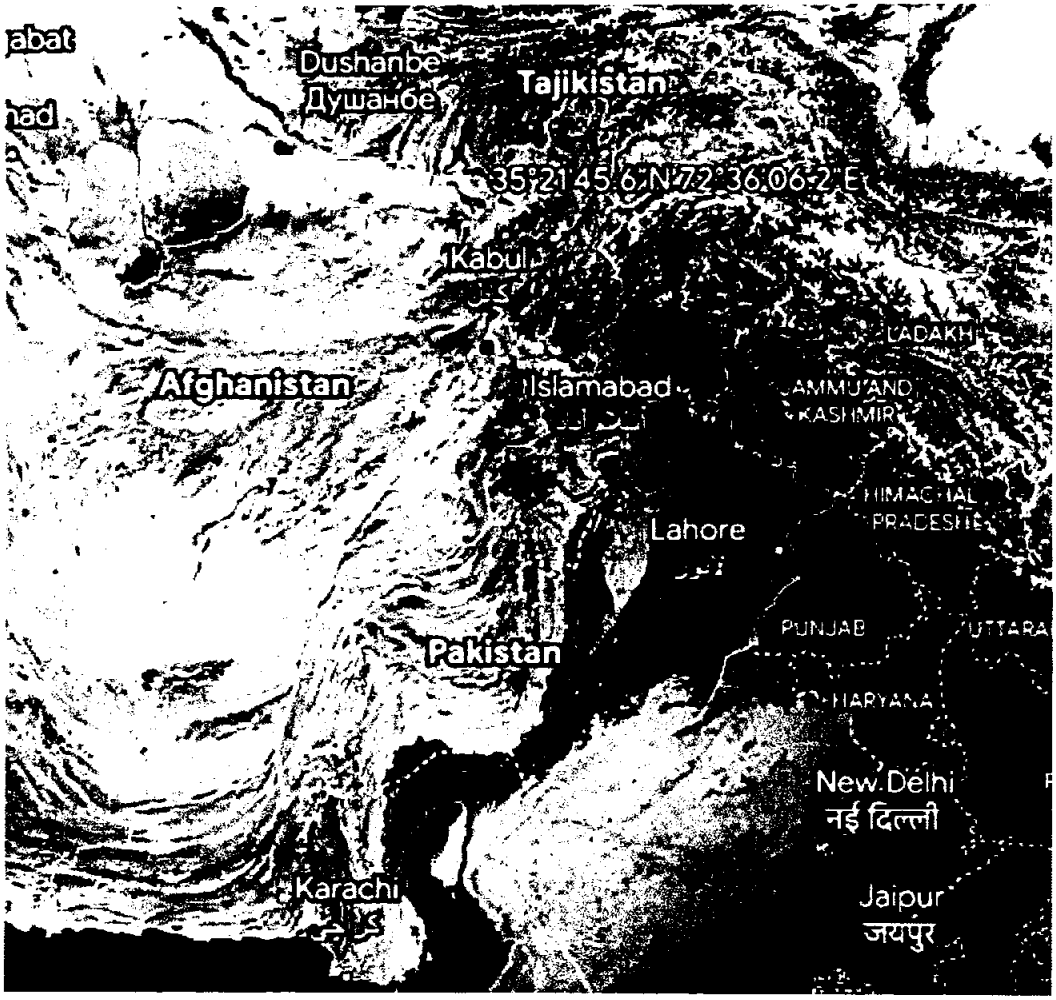
SCHEDULE-I

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



Location of the Generation Facility/Hydel Power Plant of the Licensee on Map of Pakistan



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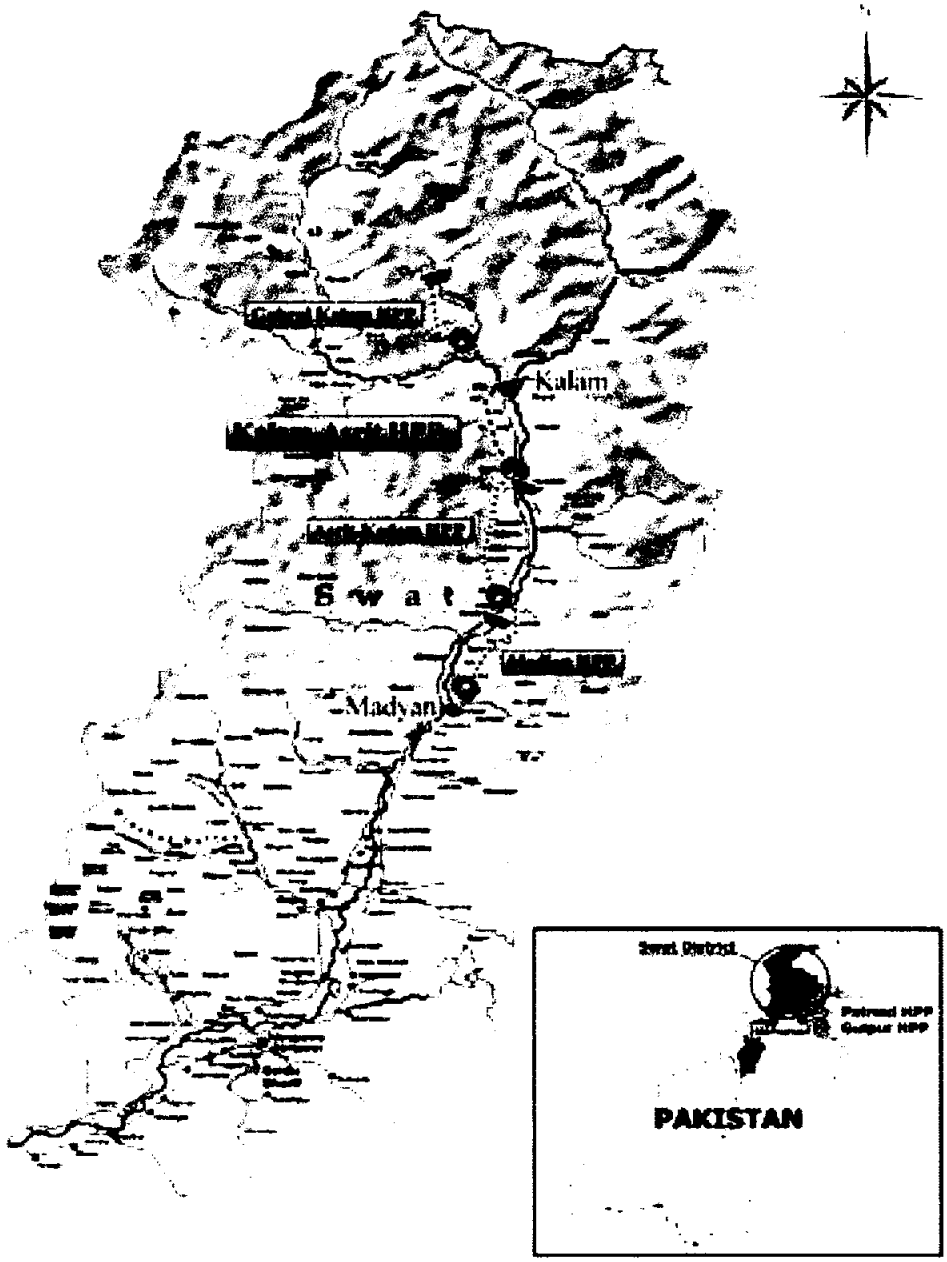
Location of the Generation Facility/Hydel Power Plant of the Licensee on Map of Pakistan Map of the Province of KPK



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Land Coordinates of the Generation Facility/Hydel Power Plant of the Licensee

Project Component	Coordinates
Weir	35°27'52.65"N 72°35'52.42"E
Powerhouse	35°21'45.62"N 72°36'6.20"E

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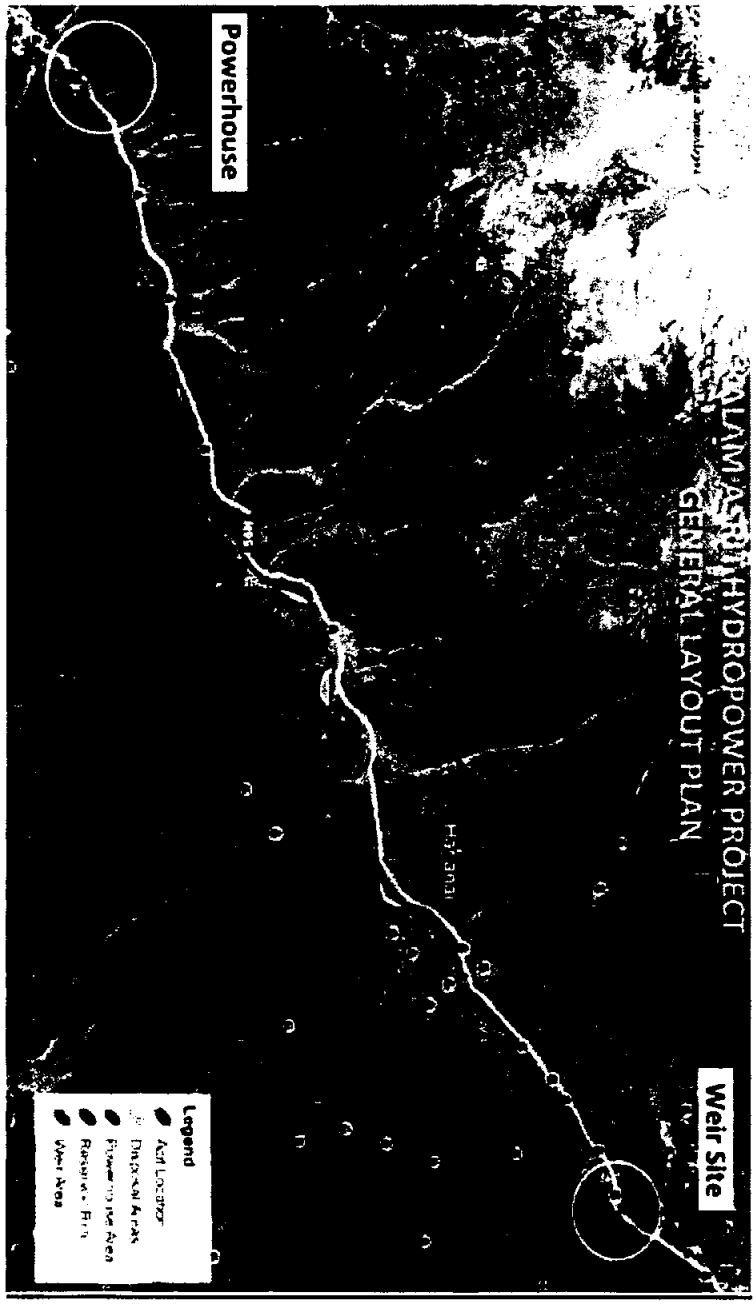
Lay-out of the Generation Facility/Hydel Power Plant of the Licensee



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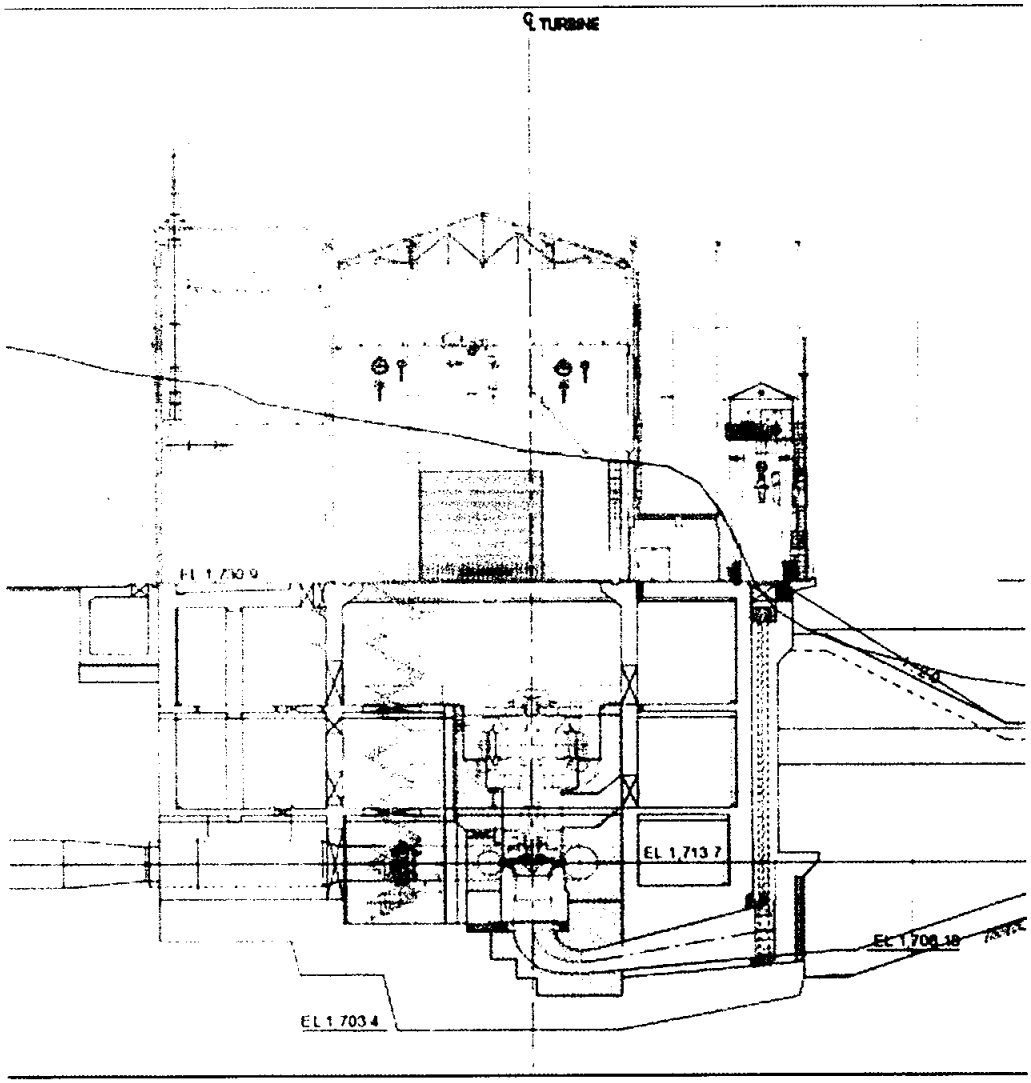
Powerhouse of the Generation Facility/Hydel Power Plant of the Licensee



Interconnection Arrangement for Dispersal of Electric Energy/Power from the Generation Facility/Hydel Power Plant of the Licensee

The electric power generated from the generation facility/Hydel Power Plant of the Licensee/KA Power Limited (KAPL) shall be dispersed to the national grid.

(2). The dispersal/interconnection arrangement will consist of: (a). a 132 kV twin bundle Twin Bundle Rail circuit, carrying power accumulated at Gabral Kalam HPP to the collector and generating station of Kalam Asrit HPP; (b). A 220 kV Quad Bundle Rail double circuit of around 110 km length, carrying power from Kalam Asrit HPP to Chakdara-New grid station, with Chokel Khwar HPP and Kalam Asrit HPP and Madyan HPP looped in-out at the circuit.

(3). Any change in the above Interconnection Arrangement/Transmission Facility duly agreed by Licensee, NTDC and PESCO, shall be communicated to the Authority in due course of time.

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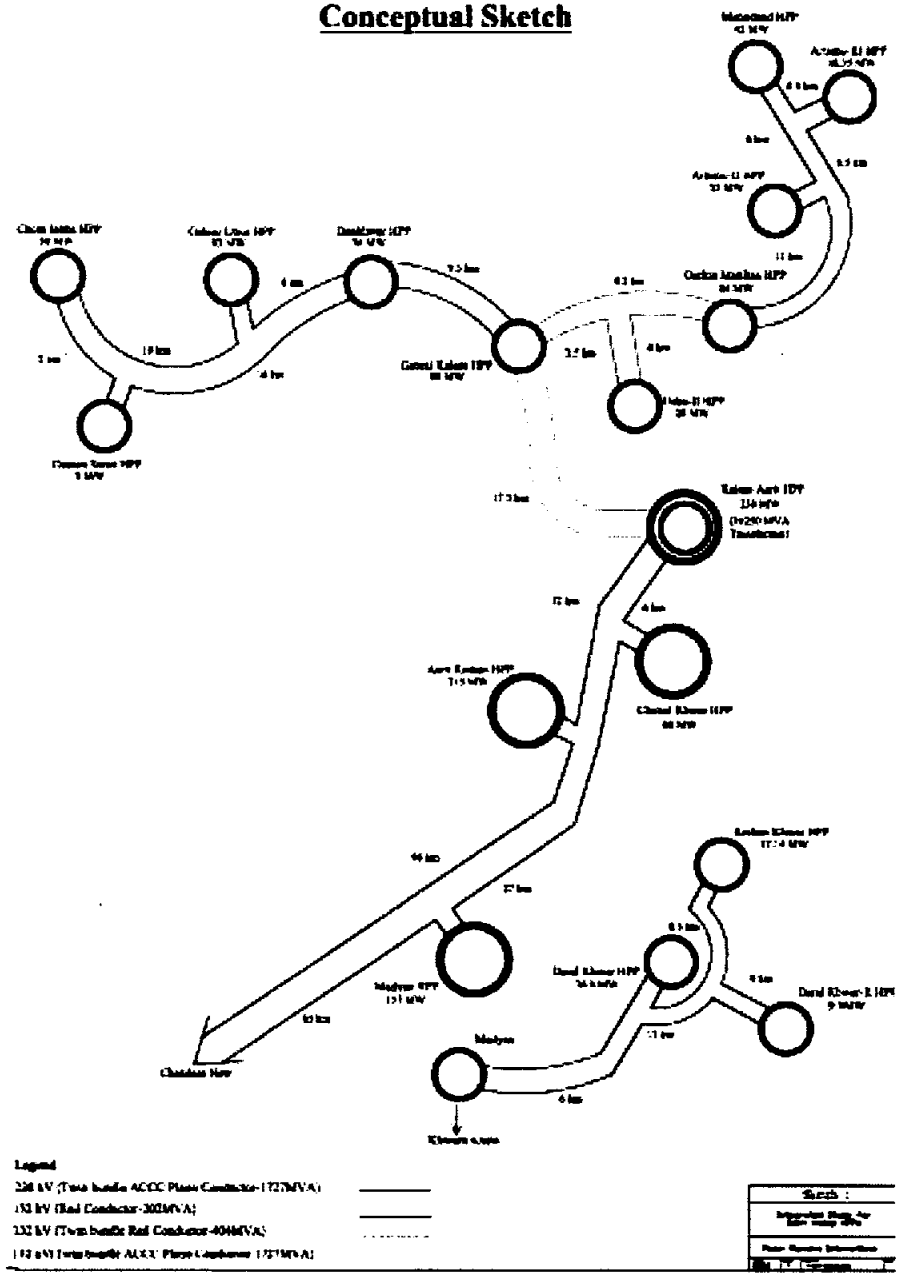
Schematic Diagram for Dispersal of Electric Energy/Power from Generation Facility/Hydel Power Plant of the Licensee

Sketch of HPP Location & Interconnection in Swat Valley

Conceptual Sketch



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Detail of Generation Facility/Hydel Power Plant of the Licensee

(A). General Information

(i).	Name of the Licensee/ Company	KA Power Limited
(ii).	Registered/Business Office of the Licensee/ Company	7-C, Sector G-8 Markaz, Islamabad
(iii).	Location of the Generation Facility	Between Kalam and Asrit villages, District Swat, Khyber Pakhtunkhwa
(iv).	Type of Generation Facility	Hydel Power Plant

(B). Hydrology

(i).	Name of River	Swat River
(ii).	Catchment area	2,030 km^2
(iii).	Annual Average Run-off	88.40 m^3/s
(iv).	Plant Discharge	130.0 m^3/s
(v).	Gross Head	222.10 m
(vi).	Head loss	18.10 m
(vii).	No. of Units/Size of each Unit	68.4 x 03 MW + 33.0 x 01 MW
(viii).	Annual Average Power Generation	945.8 GWh

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(ix).	Plant Factor	45.37 %

(C). Diversion Tunnel

(i).	Diversion discharge	400.40 m^3/s
(ii).	Size	D-Shaped, 7.5 x 7.5 x 3.75 m
(iii).	Length	484.0 m

(D). Upstream Cofferdam

(i).	Type	Concrete Dam with secant pile
(ii).	Dam Crest Level	1944 (1940) EL. m

(E). Downstream Cofferdam

(i).	Type	Rockfill Dam
(ii).	Dam Crest Level	1935 EL. M

(F). Weir & Spillway

(i).	Type	Concrete Gravity Dam (CGD)
(ii).	Design discharge	1258.30 (1000 yrs) m^3/s
(iii).	Safety Check Discharge	1948.0 m^3/s

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(iv).	Weir Crest Level	1947.0 EL. m
(v).	Spillway Crest Level	1939.0 EL. M
(vi).	Length	90.30 m
(vii).	Height	23.0 m
(viii).	Spillway Gate	10.0 x 6.0 x 3.0 m
(ix).	Sluiceway Gate	5.0 x 4.5 x 2.0 m

(G). Desander Basin

(i).	Type	Design Particle: 0.2 mm
(ii).	Width	Variable
(iii).	Height	12.0 m
(iv).	Length	230.0 m

(H). Intake

(i).	Type	Bellmouth circular
(ii).	Invert elevation	1930.0 EL. m
(iii).	Inlet Diameter	7.40 m

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(iv).	Length	29.20 m

(I). Headrace Tunnel

(i).	Type	Circular
(ii).	Diameter	7.40 m
(iii).	Length	11589.60 m

(J). Vertical Pressure Shaft

(i).	Type	Circular
(ii).	Diameter	7.40 (Concrete) m
(iii).	Height	125.90 m

(K). Surge Shaft

(i).	Type	Restricted Orifice
(ii).	Size	D 18.0 m
(iii).	Height	81 (incl. Orifice) m
(iv).	Orifice Size	D 5.0 m
(v).	Max. up-surging water Level	1969.60 EL. m

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(vi).	Min. down-surging water level	1903.80 EL. m

(L). Penstock (Manifold)

(i).	Type	Circular Steel lined
(ii).	Diameter	5.60 – 2.10 m
(iii).	Length	339.5 (straight distance) D 5.6, L 296.9, m D 3.0, 29.06, m D 2.1, L 10.45 m

(M). Powerhouse

(i).	Type	Surface
(ii).	Size	41.70 x 100.65 x 50.90 m
(iii).	Turbine Type	Francis
(iv).	Plant Gross Capacity	238 MW 68.4 MW x 3 Units 33.0 MW x 1 Unit
(v).	Turbine-Center Level	1713.70 EL. m
(vi).	Generating Voltage	11 KV

(N). Transformer(s)

(i).	Number of 3 phase transformer	3/1
(ii).	Type	3-phase, two windings

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(iii).	Rated bank output of 3 phase transformer	86MVA / 41.5 MVA
(iv).	Frequency	50 Hz
(v).	Type of cooling	OFWF
(vi).	Primary voltage rating	11 KV
(vii).	Secondary voltage rating	220 KV

(O). Other Information

(i).	COD of the Generation Facility/Hydel Power Plant	July 31, 2029 (Anticipated)
(ii).	Expected Minimum Useful Life of the Generation Facility from COD	30 Years

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SCHEDULE-II

The Total Installed Gross ISO Capacity (MW), De-Rated Capacity At Reference Site Conditions (MW), Auxiliary Consumption (MW) and the Net Capacity At Reference Site Conditions (MW) of the Generation Facility/Hydro Power Plant of Licensee is given in this Schedule

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SCHEDULE-II

(1).	Total Installed Gross Capacity of the Generation Facility/Hydel Power Plant (3 x 68.40 MW + 33.0 MW Francis Turbines)	238.20 MW
(2).	Total De-Rated Capacity of the Generation Facility/Hydel Power Plant at Mean Site Conditions (3 x 68.40 MW + 33.0 MW Francis Turbines)	238.20 MW
(3).	Auxiliary Consumption of the Generation Facility/Hydel Power Plant	2.382 MW
(4).	Net Capacity of the Generation Facility/Hydel Power Plant at Mean Site Conditions Condition (3 x 67.716 MW + 32.67 MW Francis Turbines)	235.818 MW

Note

All the above figures are indicative as provided by the Licensee. The Net Delivered Energy available to Power Purchaser for dispatch will be determined through procedures contained in the Power Purchase Agreement (PPA) or the Applicable Document(s).

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