National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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Registrar

No. NEPRA/R/DL/LAG-434/8627-33 February 17, 2021

Mr. Rumman Arshad Dar,
Chief Operating Officer,
Master Hydro (Private) Limited,
82-C-1, Gulberg-III,
Lahore.

Subject: **Grant of Generation Licence No. IGSPL/107/2021**
Licence Application No. LAG-434
Master Hydro (Private) Limited (MHPL)

Reference: *MHPL's application vide letter No. Nil dated July 05, 2018.*

Enclosed please find herewith Determination of the Authority in the matter of Application of "Master Hydro (Private) Limited (MHPL)" for the Grant of Generation Licence along with Generation Licence No. IGSPL/107/2021 annexed to this determination granted by the National Electric Power Regulatory Authority (NEPRA) to Master Hydro (Private) Limited (MHPL) for its 102.063 MW Arkari Gol Hydropower Project located on River Arkari Gol, near Uchhatur village, District Chitral, in the Province of Khyber Pakhtunkhwa, pursuant to Section 14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997/Amendment Act, 2018.

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

Enclosure: As Above

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(Syed Safeer Hussain)

Copy to:

1. Secretary, Power Division, Ministry of Energy, A-Block, Pak Secretariat, Islamabad.
2. Managing Director, NTDC, 414-WAPDA House, Lahore.
3. Chief Executive Officer, CPPA-G, 73 East, A.K. Fazal-ul-Haq Road, G-7/2, Blue Area, Islamabad.
4. Chief Executive Officer, Peshawar Electric Supply Company Limited, PESCO House, Shami Road Peshawar.
5. Director General, Environment Protection Department, Government of KPK, 3rd Floor, Old Courts Building, Khyber Road, Peshawar.
6. Secretary, Energy and Power Department, Government of Khyber Pakhtunkhwa, 1st Floor, A-Block, Abdul-Wali Khan Multiplex, Civil Secretariat, Peshawar.

National Electric Power Regulatory Authority
(NEPRA)

Determination of the Authority in the Matter of Motion for Leave for Review filed by Master Hydro (Private) Limited Against the Rejection of its Application for the Grant of Generation Licence

February 17, 2021
Case No. LAG-434

(i). Master Hydro (Private) Limited (MHPL) submitted an application for grant of the generation licence in respect of its 102.30 MW Arkari Gol Hydel Power Project on July 06, 2018. The Authority admitted the application on August 29, 2018 and after going through the process decided to reject its application vide letter dated November 08, 2019 due to non-submission of: (a). Grid Interconnection Study (GIS) and its approval; (b). No Objection Certificate (NOC) from IRSA; (c). documents about acquisition of land for the project; and (d). NOC from Environmental Protection Agency, Govt. of Khyber Pakhtunkhwa (EPAGoKPK).

(ii). MHPL being aggrieved of the abovementioned decision of the Authority, filed a motion for leave for review under Regulation-3(2) of the NEPRA (Review Procedure) Regulations, 2009 (the "Review Regulations") on December 27, 2019. The Authority considered the submissions of MHPL and admitted the motion for leave for review and decided to hold hearing and the same was held on March 11, 2020 wherein MHPL, PESCO and PEDO participated.

(iii). MHPL submitted that it was awarded project through competitive bidding after which it approached the Authority for the grant of generation licence however, carrying out the GIS was not within its scope. It is a matter of record that a meeting was held at PPIB and it was decided that NTDC will carry out a consolidated GIS for all projects proposed to be located in Dir and Chitral districts. In this regard, NTDC has already prepared a Request for Proposal (RFP) and the same has been shared with PEDO for hiring the services of consultant to conduct consolidated GIS once the same is completed, it will be then submitted for the consideration and record of the Authority.

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(iv). Regarding allocation of land, it was submitted that according to RFP a Letter of Support (LoS) will be is issued after Letter of Award (LoA) by PEDO, pre-requisite for the said includes the grant of licence and notification of tariff. Therefore, once the Authority grants MHPL the generation licence, it will pursue PEDO and other relevant agencies for allocation/acquisition of land and provide the necessary documents/proof in the matter. About submission of NOC from IRSA and EPAGoKPK, the company informed that it approached the relevant departments and obtained the same which have been submitted to the Authority.

(v). The Authority considered the above submissions of MHPL and found the same plausible and accordingly, decided to accept the review motion filed by MHPL in terms of relevant provisions of the Review Regulations and decided to proceed with its application for the grant of generation licence.

Authority

Rafique Ahmed Shaikh
(Member)

Rehmatullah Baloch
(Member)

Engr. Bahadur Shah
(Member)

Saif Ullah Chattha
(Member)

17.2.2021

Tauseef H. Farooqi
(Chairman)

Did not attend-Away

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National Electric Power Regulatory Authority (NEPRA)

Determination of the Authority in the Matter of Application of Master Hydro (Private) Limited for the Grant of Generation Licence

February 17, 2021
Case No. LAG-434

(A). Background

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

(ii). The Government of Khyber Pakhtunkhwa through the Pakhtunkhwa Energy Development Organization ("PEDO") decided to offer solicited sites (where feasibility study has been conducted) to different investors as Independent Power Producers [IPP(s)] on Build-Own-Operate-Transfer (BOOT) basis through International Competitive Bidding/Competitive Bidding (ICB/CB) as stipulated in the "Khyber Pakhtunkhwa Hydropower Policy 2016" (hereafter called the KP Hydropower Policy). In consideration of the said, PEDO carried out ICB/CB and declared the Master Textile Mills Limited (hereafter called the "Main Sponsor") as the successful bidder for the development of 102.00 MW Arkari Gol Hydropower Project to be set up at Arkari Gol river in district Chitral in the province of Khyber Pakhtunkhwa.

(iii). Further, the sponsors of the project incorporated Special Purpose Vehicle (SPV) in the name of Master Hydro (Private) Limited (MHPL) and approached the Authority for the grant of generation licence.

(B). Filing of Application

(i). MHPL submitted an application on July 06, 2018 for the grant of Generation Licence in terms of the then Section-15 (now 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 and Modification Procedure) Regulations, 1999 (the "Licensing Regulations").

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(ii). The Registrar examined the submitted application to confirm its compliance with the Licensing Regulations and observed that the application lacked some of the required information/documentation. In view of the said, the Registrar directed MHPL for submitting the missing information/documentation and the same was received on July 18, 2018. The Authority considered the matter and found the form and content of the application in substantial compliance with Regulation-3 of the Licensing Regulations. Accordingly, the Authority admitted the application on August 29, 2018 for consideration of the grant of the Generation Licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority also approved a notice of admission to be published in the press for inviting comments of general public, interested and affected persons in the matter as stipulated in Regulation-8 of the Licensing Regulations. Accordingly, the said notices were published in one (01) Urdu and one (01) English newspaper on August 31, 2018.

(iii). In addition to the above, the Authority also approved a list of stakeholders for seeking their comments for assistance of the Authority in the matter in terms of Regulation-9(2) of the Licensing Regulations. Accordingly, letters were sent to different stakeholders as per the approved list on September 03, 2018, soliciting their comments for assistance of the Authority.

(C). Comments of Stakeholders

(i). In reply to the above, the Authority received comments from seven (07) stakeholders. These included Indus River System Authority (IRSA), Central Power Purchasing Agency (Guaranteed) Limited (CPPA-G), Irrigation department of Govt. of Punjab (IDGoPb), Pakistan Water and Power Development Authority (WAPDA), Punjab Power Development Board (PPDB) and Alternative Energy Development Board (AEDB). The salient points of the comments offered by the said stakeholders are summarized below:-

(a). IRSA submitted that the Authority may ask the sponsors to provide it a copy of PC-1, along with feasibility report, of the project and also apply for No Objection Certificate (NOC);

(b). CPPA-G stated that the Several Power Acquisition Requests (PAR) were received from the different companies however, the same were not entertained as Cabinet Committee on Energy

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(CCoE) has decided to hold competitive bidding for RE projects after allocation of share by Grid Code Review Panel (GCRP). The Rule-3 of the NEPRA (Generation) Rules, 2000 (the "Generation Rules") lays down the least cost option criteria for the grant of generation licence therefore, the same may be considered accordingly. The State of Industry Report 2017 (SIR 2017) envisages surplus power to the tune of 13, 934 MW up to the year 2025 which will have financial implications for the end consumer resulting in excess cost of investment of up to Rs. 22 billion therefore, the Authority should consider the grant of generation licences keeping in view the demand vs. supply situation;

(c). IDGoPb submitted that the proposed Hydel Power Plant of MHPL is a Run-of-River project in district Chitral therefore, it has no objection to the grant of generation licence to the company;

(d). WAPDA commented that necessary details of the project may be shared with it;

(e). PPDB remarked that the net head is not mentioned in the notice of admission based on which the capacity is determined. If the power purchase is CPPA-G, then the project fulfils the least cost generation plan of concerned DISCO and NTDC as envisaged in NEPRA (Competitive Bidding) Tariff Regulations, 2017 or otherwise. Further, PPDB questioned whether the Hydel Power Plant is being developed on competitive tariff or cost plus tariff;

(f). NTDC informed that the project of MHPL is not included in the draft Indicative Generation Capacity Expansion Plant (2018-40) and no data pertaining to it is available as executing agencies have not communicated the said project as upcoming generation project; and

(g). AEDB stated that it has no comments in the matter.

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(ii). The Authority examined the above comments of stakeholders and in view of the observations made, considered it appropriate to seek the perspective of MHPL on the same. On the comments of IRSA, it was submitted that matter has been taken up with PEDO for its stance whether the No Objection Certificate (NOC) from IRSA is applicable to its project or not as the same was not pre-requisite under the Request for Proposal (RFP). Later on, the company provided all the necessary documentation desired by IRSA accordingly, it obtained the required NOC. Regarding the observations of CPPA-G, it was stated project of MHPL is one of the first projects to be developed under a competitive bidding regime for hydropower projects under the KPK Hydropower Policy, 2016 project has been awarded in terms of relevant provisions of the NEPRA Competitive Bidding Tariff (Approval Procedure) Regulations, 2014 (the "Bidding Regulations"). The bidding process has yielded a levelized tariff of USc 7.9175/kWh and a cost USD 2.20 million/MW, which are amongst the lowest generation cost available in Pakistan today. MHPL submitted that that the proposed tariff is lower than all other private sector hydropower projects to which Authority has granted tariff. Therefore, the project satisfies the least cost criteria as stipulated in Rule-3 of the Generation Rules and its inclusion in the generation mix benefit the consumers by reducing the overall basket price of electricity.

(iii). Further, MHPL submitted that CPPA-G referred to State of Industry Report 2017 ("SIR 2017") which transpires that there will be an excess capacity of over 13,000 MW by the year 2025. In this regard, it is of the view that the installed capacity forecasts assume that several large, public hydropower projects will commence operations as per schedule, which historically has never been the case. The SIR 2017 also acknowledges the said notion whereby it is mentioned that capacity surplus in the later years i.e. 2022 to 2025 may not be available due to multiple issues and resulting uncertainties in completion of large hydro- based power projects therefore, other generation options must be considered, otherwise there is a risk of being plunging back into the power crisis.

(iv). MHPL stated that demand projections are usually based on statistical tools that take into account past trends and can never be 100% accurate. The projected demand trend in the SIR 2017 appears to be almost linear and may not account for changes in demand due to GDP growth and rise in per capita income of Pakistan. Pakistan already has one of the lowest per capita consumptions of energy globally, which can only be expected to grow. In view of new technological

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advancements such as electric cars, intra-city trains etc. which are expected to permeate the global markets in the next 5 - 7 years, MHPL is of the opinion that there will be increase in the demand for electricity which may not have been considered in the demand forecasts.

(v). Regarding the observations of WAPDA, it was submitted that required information is already given in its application for the grant of generation licence. About the comments of PPDB, MHPL informed that the proposed gross head is 335.3 meters and net head is 318 meters whereas, the mean annual energy based on design discharge of 36 m^3/s (and plant factor of 43.6%) will be 372 GWh. The company reiterated that its project is being developed under competitive bidding regime in terms of the Bidding Regulations as explained above. On the comments of NTDC, the company took up the matter with PEDO which then responded to NTDC for inclusion of its project in the draft IGCEP.

(vi). The Authority considered the above submissions of MHPL and decided to proceed further in the matter for the consideration of grant of generation licence as stipulated in the Licensing Regulations and the Generation Rules.

(D). Evaluation/Findings

(i). The Authority has reviewed the submissions of MHPL 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 feasibility study of the project and Environmental Impact Assessment (EIA) of the project, the KP Hydropower Policy, provisions of the NEPRA Act and the relevant rules & regulations made thereunder.

(ii). The Authority has observed that Arkari Gol hydropower project was identified as part of a comprehensive study conducted by the Government of Khyber Pakhtunkhwa in collaboration with the German Agency for Technical Cooperation. In 2013-14, an extensive site investigation was conducted by the PEDO which included field reconnaissance, topographical survey, hydrological and geological investigations and engineering and design studies. Based on the results of field investigations, the project was considered viable for development and the results were compiled into a Project Feasibility Study. In accordance with the guidelines of the Authority for competitive bidding for award of solicited sites, PEDO initiated a

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single stage two-envelope competitive bidding process for award of the Project. Accordingly, the pre-qualified bidders were required to submit both a technical proposal and a commercial proposal, based on the design outlined in the Feasibility Study.

(iii). In compliance with the requirements of the RFP, Master Textile Mills Limited (MTML/the Main Sponsor) submitted its technical and commercial proposals to PEDO for evaluation. After going through the bidding process, PEDO notified MTML as the successful bidder for the development of the project. MTML is principally engaged in the manufacturing and trade of yarn, grey cloth, dyed fabric and stitched garments. The Main Sponsor is part of Master Group of Industries (the Group), one of the most dynamic business groups of Pakistan. The Group started its core business in the bedding industry followed by diversification into textile. Realizing the role of clean energy in development of the nation, Master Group ventured into the power generation sector by developing a 52.80 MW wind power project in Jhimpir, Sindh. Master Wind Energy Limited (MWEL) successfully commenced commercial operation in October 2016. The company is expanding its operational base by developing two additional wind energy projects in the wind corridor of District Thatta, as well as installing a solar hybrid set up at the existing MWEL project site.

(iv). The Authority has observed that the applicant company (i.e. MHPL) is a private limited company incorporated on August 09, 2017 under Section-16 of the Companies Act, 2017 (XIX of 2017) having Corporate Universal Identification No. 0110719. The registered/business office of the company is located at furniture market Dir, district Upper Dir, Khyber Pakhtunkhwa. According to the Memorandum of Association, the principal object of the company, *inter alia*, includes, setting up, operating, and supplying electric power. According to the submitted information, the total outlay of the project will be approximately U.S. $ 214.55 million which will be financed through a combination of debt (U.S. $ 160.91 million) and equity (U.S. $ 53.64 million) in a ratio of 75:25. On the debt financing front, Overseas Private Investment Corporation (OPIC) and National Bank of Pakistan (NBP) have committed to arrangement of the required foreign and local financing.

(v). The Authority has reviewed the feasibility study of the project and same has revealed that PEDO carried out feasibility study through joint venture of Consultants comprising of Civ-Tech Associates & EPAC Consultants, International

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Expert Group for Hydropower Development, Designmen Consulting Engineers and Four Star Engineering Group. According to the said study, MHPL is developing Arkari Gol Hydel Power Project which is a 102.063 MW Run of River Project proposed to be located on Arkari Gol river, district Chitral in the province of Khyber Pakhtunkhwa. The Arkari Gol river is a left bank tributary of Lutkho River and joins it about 1 km upstream Shoghore Village. The project area is located in the north-west of Chitral Town at a distance of 37 km. The dam and intake structure will be located 08 km upstream of the confluence of Arkari Gol and Lutkho River, near the village of Ucchatur in Chitral district. The powerhouse will be located 7.5 km downstream of the dam on the right bank of Arkari Gol, near the village of Andakht.

(vi). The main components of the project include construction of a concrete face rock fill dam with 20m height above river bed. The dam body shall be 150m long at the river bed level and 200 long at the crest level. The construction of dam would create a reservoir of 1.06 hm^3 capacity with live storage of 0.489 hm^3 for normal and four hours of peaking operation. The spillway with four regulation gates of 6 m x 6 m each and bottom out lets of the same size for periodic flushing of sediment deposits in front of the intake structure have been provided. This will also serve to pass floods of 1000 return period. Stilling basin of 90m length have been proposed for dissipation of energy of the water flowing through the spillway. The steel lined pressure shaft of 296 m length and pressure tunnel of 3.0 m diameter and 494 m length would convey water to the turbines installed in the power house. A horse shoe diversion tunnel is proposed for diversion of water during construction of dam body, spillway and power canal intake structure designed to convey 36 m^3/s water to the power house.

(vii). The proposed installed capacity of the Hydel Power Plant is 102.063 MW consisting of three (03) Vertical Pelton type turbines (3 x 34.021 MW). The capacity of the project has been optimized keeping in view the design discharge of 36 m^3/s (1271 Cusecs). The Hydel Power Plant is a medium head run of river project having gross head of 331.3 m and net head 318.0 m, respectively. The mean annual energy from the project will be approximately 378 GWh at plant factor of 43.60%.

(viii). Regarding interconnection of the project with the National Grid, the Authority has noted that MHPL stated that a meeting was held in the office of PPIB whereby it was decided that NTDC will carry out a consolidated GIS for all projects in Dir and Chitral districts for which it has also prepared a Request for Proposal and the

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same has been shared with PEDO for hiring services of consultants to conduct GIS. In this regard, the Authority has observed that PEDO is in process of getting conducted the required study and the same is in advance stage for evacuation of power from upcoming hydel projects in Chitral Corridor and the project of MHPL will be part of that integrated grid study.

(ix). The Authority has observed that the proposed project, for which Generation Licence is being sought, is based on clean source of water and does not cause pollution as in the case of conventional power plants. However, the operation of the generation facility/hydro power plant may cause soil pollution, water pollution and noise pollution during construction and operation. In this regard, the Authority has observed that MHPL carried out the Environmental 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 has 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-3(2) and Rule-3(3) stand satisfied as MHPL 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-

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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.

(xii). In consideration of the above, the Authority has observed that the proposed project will be located in district Chitral which has huge potential for the development of hydel projects including that under consideration project of the MHPL. The Authority considers that the development of the said project will result in development of the indigenous resource of hydel which is considered vital for the sustainable development and optimum utilization of the energy resources of the country. As explained above, the GIS of the project as well as the corridor is still under preparation and based on the facts on record the Authority considers that issues of the cost and right-of-way considerations related to the provision of transmission and interconnection facilities and issues pertaining to the potential constraints on the transmission system will not result likely from the proposed generation facility. The Authority is of the considered opinion that the development of the project in Chitral corridor will not only result in meeting with additional capacity requirements in the long term scenario but will result in optimum utilization of various sites in the area. In view of the said, the Authority considers that the project of MHPL 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

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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 MHPL 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 MHPL, the expected Commercial Operation Date (COD) of the generation facility/Hydel Power Plant is January 01, 2025 and will have a useful life of more than thirty (30) years from its COD. In this regard, MHPL 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 MHPL are in line with the industry standards and norms. In view of the said and considering the fact that MHPL has consented for a shorter term of thirty (30) years, the Authority fixes the term of the generation licence as thirty (30) years from COD of the project, subject to the Section 14-B 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, MHPL in terms of the relevant provisions of the relevant rules has already filed a petition for determination of tariff of the project. In this regard, the Authority has already granted tariff to MHPL through its determination no.

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NEPRA/TRF-451/MHPPL-2018/16222-16224 dated October 22, 2018. In view of the said, the Authority considers appropriate to direct MHPL to charge the power purchaser/CPPA-G only such tariff which has been determined, approved or specified by it. In view of the said, the Authority decides to include a specific article in the generation licence. Further, the Authority directs MHPL 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, MHPL 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 MHPL to comply with relevant environmental standards at all times. Further, the Authority directs MHPL 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/Hydel Power Plant of MHPL 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 and MHPL is directed to adhere to the same.

(vi). Regarding GIS of the project as explained at para D(viii) above, the hydel project of MHPL will be located in district Chitral 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 is in process of getting conducted the required study and the same is in advance stage. In view of the said, the Authority directs PEDO and NTDC to complete the integrated GIS at earliest so that sponsors of various projects in the said region/corridor may be able to achieve remaining milestones within stipulated time. In view of the said, the Authority directs MHPL to apply for modification as per the relevant regulations once GIS is finalized and approved by the relevant agency to reflect the same in its generation licence. The Authority also directs MHPL not to start

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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). In view of the above, the Authority hereby approves the grant of Generation Licence to MHPL 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

Rafique Ahmed Shaikh
(Member)

Rehmatullah Baloch
(Member)

Engr. Bahadur Shah
(Member)

Saif Ullah Chattha
(Member)

17-2-2024

Tauseef H. Farooqi
(Chairman)

Did not attend-Away

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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 or replaced from time to time;

(b). "Applicable Documents" mean the Act, 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" mean 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" means commercial code prepared by CPPA-G under the National Electric Power Regulatory Authority (Market Operator, Registration, Standards and Procedure) Rules, 2015 as amended or replaced 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 distribution code prepared by the concerned XW-DISCO and approved by the Authority, as may be revised from time to time with necessary approval of the Authority;

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

(m). "Grid Code" means the grid code prepared and revised from time to time by NTDC with necessary approval of the Authority;

(n). "GoP" means the Government of Pakistan acting through the PPIB which has issued or will be issuing to the Licensee a LoS for the design, engineering, construction, insuring, commissioning, operation and maintenance of the generation facility/Hydel Power Plant;

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

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

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

(r). "Implementation Agreement (IA)" means the implementation agreement signed or to be signed between the GoP and the Licensee in relation to this particular generation facility/Hydel Power Plant, as may be amended from time to time;

(s). "Letter of Support (LoS)" means the letter of support issued or to be issued by the GoP through the PPIB to the Licensee;

(t). "Licensee" means **Master Hydro (Private) Limited** or its successors or permitted assigns;

(u). "Licensing Regulations" mean the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 as amended or replaced from time to time;

(v). "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;

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

(x). PEDO" means Pakhtunkhwa Energy Development Organization or any other entity created for the like purpose established by the Govt. of Khyber Pakhtunkhwa to facilitate, promote and encourage

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National Electric Power Regulatory Authority (NEPRA)
Islamabad – Pakistan

GENERATION LICENCE

No. IGSPL/107/2021

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:

MASTER HYDRO (PRIVATE) LIMITED

Incorporated Under Section-16
of the Companies Act, 2017 (XIX of 2017) Having Corporate Universal Identification No. 0110719, dated August 19, 2017

for its Hydel Based Generation Facility/Arkari Gol Hydel Power Project Located on River Arkari Gol near Uchhatur village, District Chitral in the Province of Khyber Pakhtunkhwa

(Total Installed Capacity: 102.063 MW Gross)

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

Given under my hand this on 17th day of February Two Thousand & Twenty One and expires on 31th day of December Two Thousand & Fifty Four.

17 02 24

Registrar

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development of private sector participation for development of projects for electric power in the province of Khyber Pakhtunkhwa;

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

(z). "Policy" means the Policy for Power Generation, 2015 of GoP as amended from time to time;

(aa). "Power Purchaser" means CPPA-G which will be purchasing electric energy from the Licensee either on behalf of all XW-DISCOs or any single XW-DISCO, pursuant to an PPA for procurement of electric energy;

(bb). "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;

(cc). "PPIB" means the Private Power and Infrastructure Board or any other entity created for the like purpose established by the GoP to facilitate, promote and encourage development of renewable energy in the country;

(dd). "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;

(ee). "XW-DISCO" means an Ex-WAPDA distribution company engaged in the distribution of electric power.

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.

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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 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.

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) Rules, 2002 as amended or replaced from time to time.

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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.

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.

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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 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.

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.

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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.

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.

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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 provide the descriptive as well as monetary disclosure of its activities pertaining to Corporate Social Responsibility (CSR) on an annual basis.

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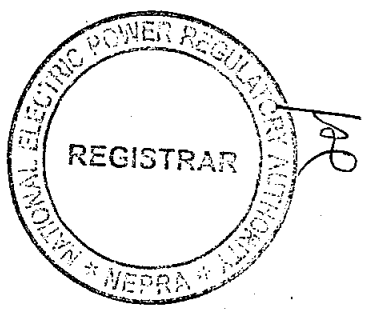
SCHEDULE-I

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 the Map of Pakistan

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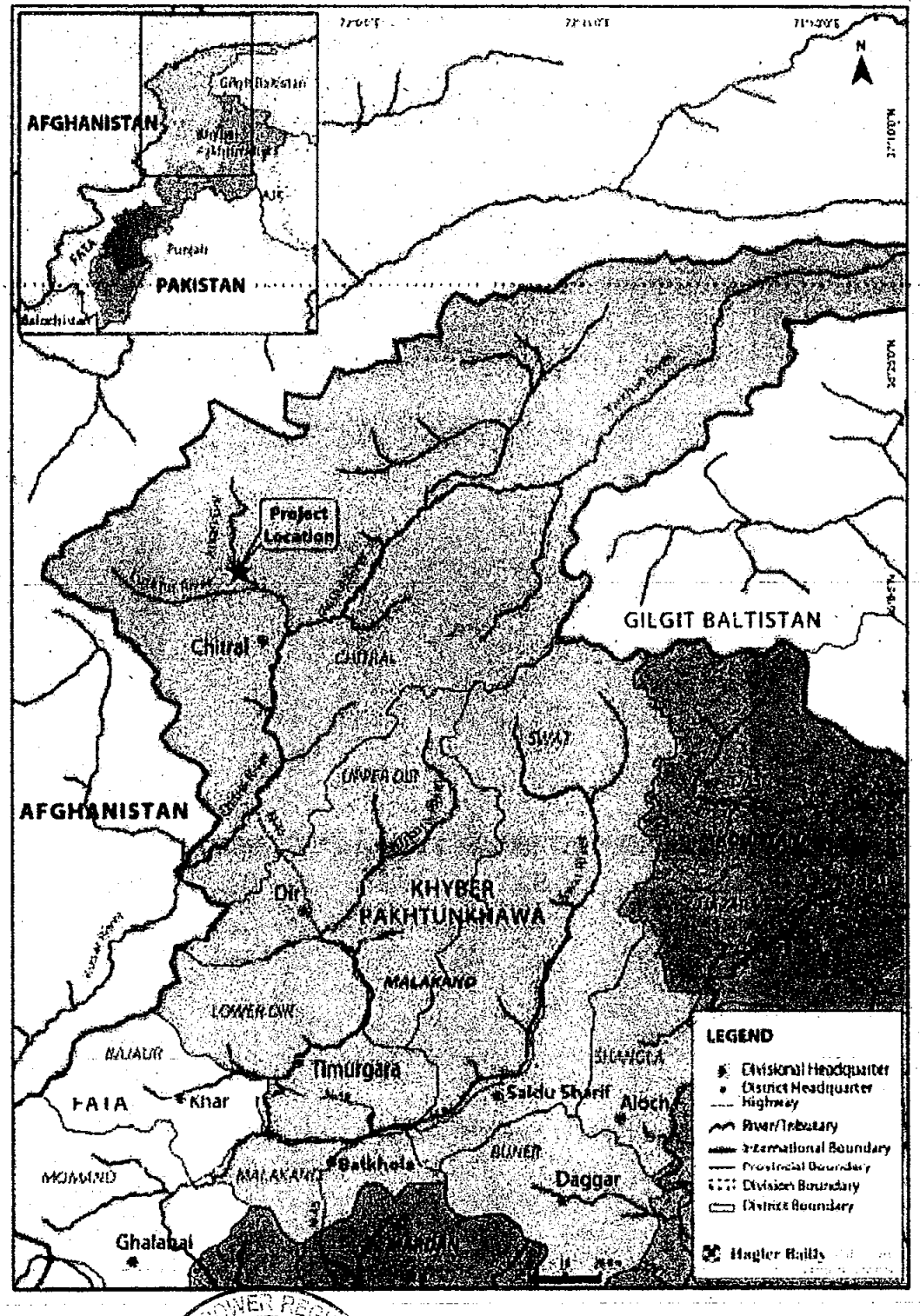
Location of the Generation Facility/Hydel Power Plant of the Licensee in the Province of KPK



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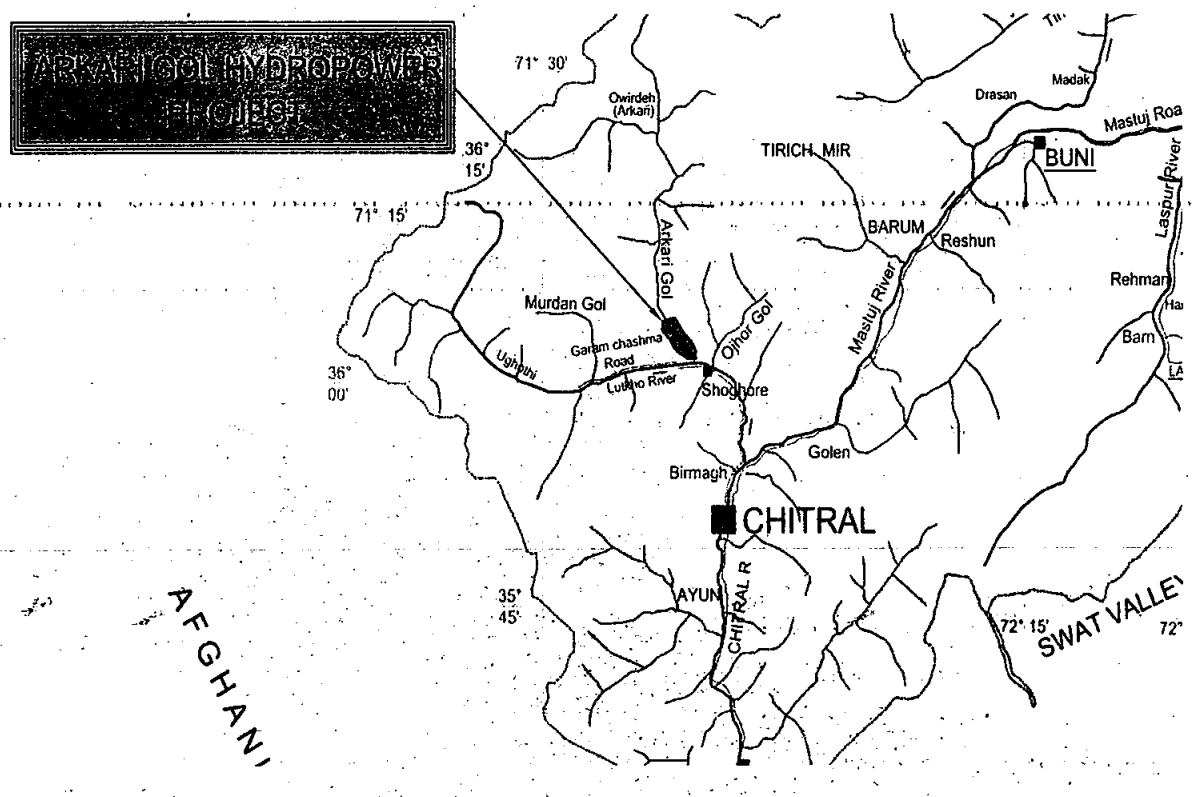
Location of the Generation Facility/Hydel Power Plant of the Licensee In District Chitral of the Province of KPK



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

Area	Latitude	Longitude
Weir Intake	71° 41' 37" E	36° 03' 57" N
Powerhouse	71° 44' 11" E	36° 01' 10" N

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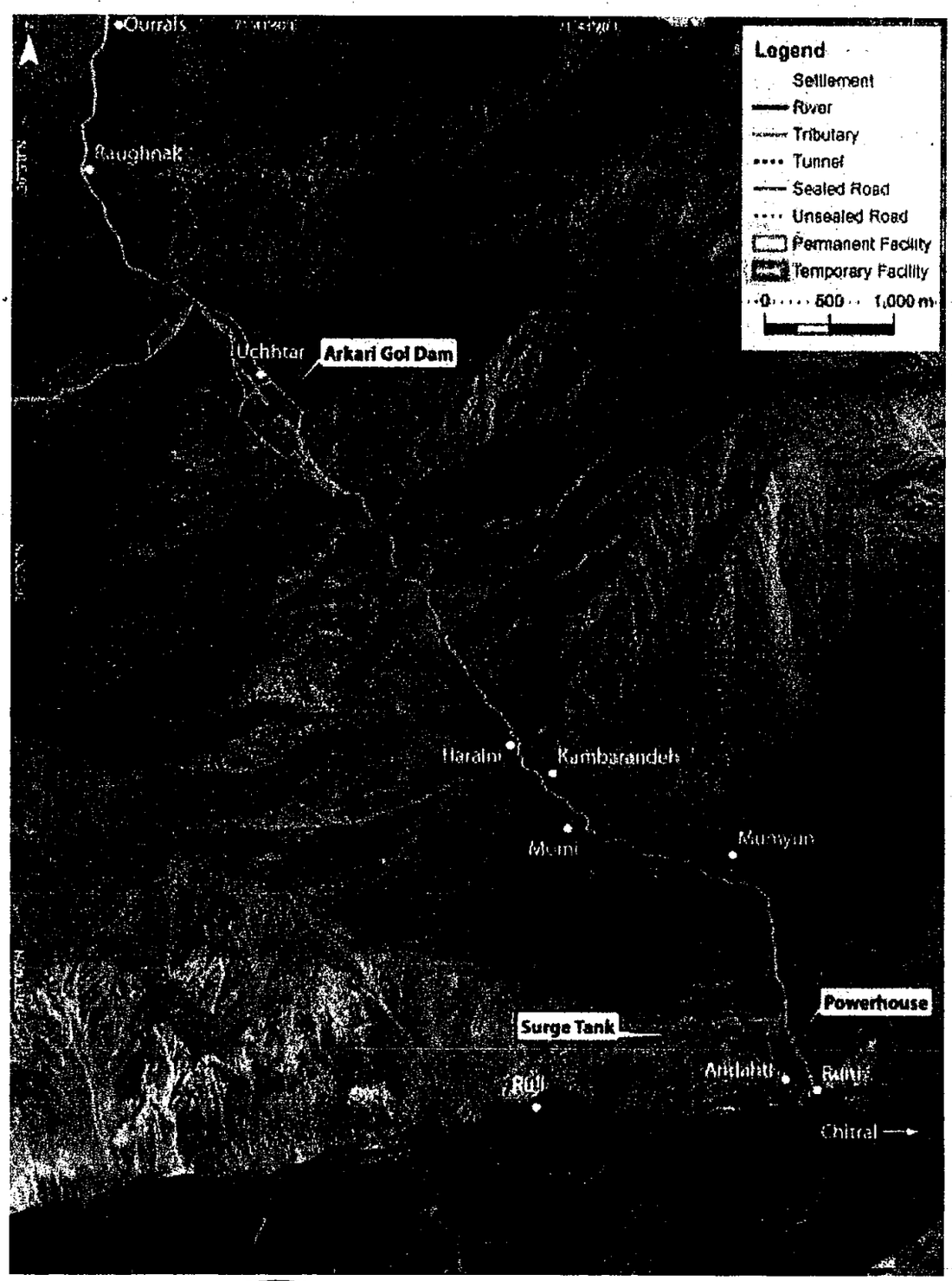
Lay-out of the Generation Facility/Hydel Power Plant of the Licensee



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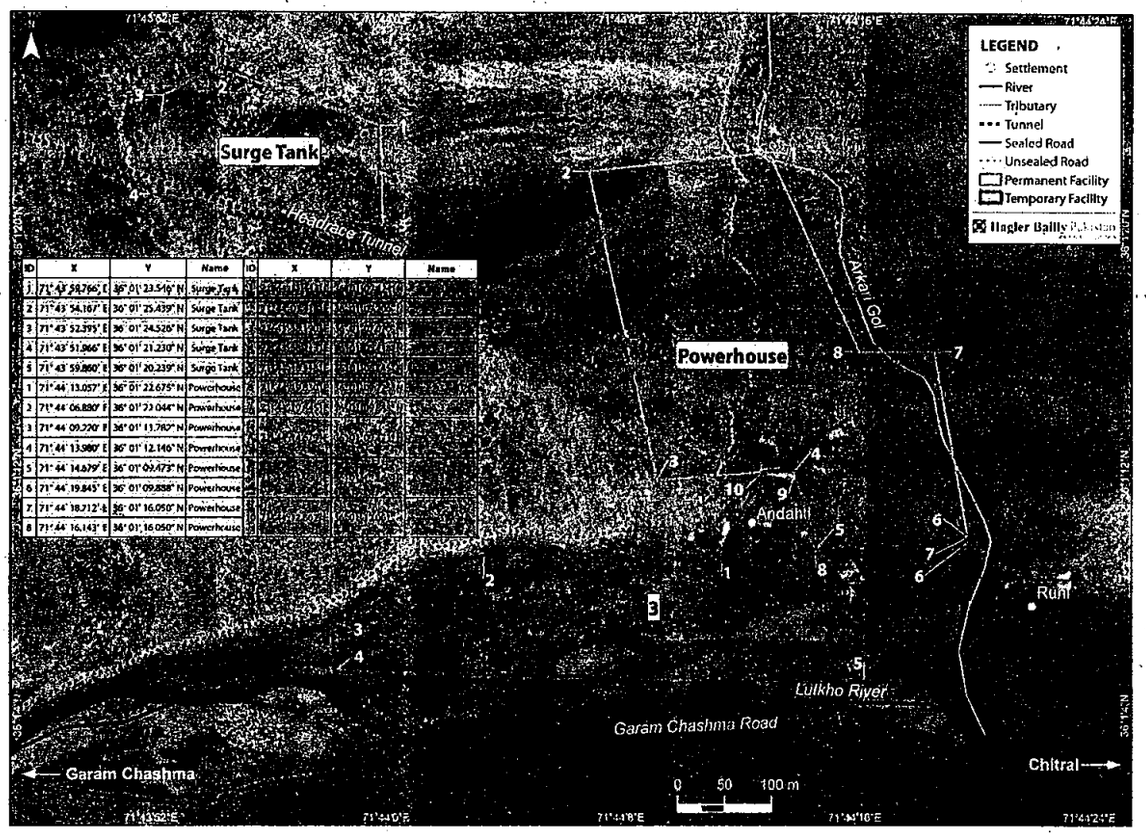
Powerhouse of the Generation Facility/Hydel Power Plant of the Licensee



ID	X	Y	Name
1	71° 43' 58.766" E	36° 01' 23.516" N	Surge Tank
2	71° 43' 54.167" E	36° 01' 25.439" N	Surge Tank
3	71° 43' 52.393" E	36° 01' 24.526" N	Surge Tank
4	71° 43' 51.966" E	36° 01' 21.230" N	Surge Tank
5	71° 43' 59.860" E	36° 01' 20.239" N	Surge Tank
1	71° 44' 13.057" E	36° 01' 22.675" N	Powerhouse
2	71° 44' 06.880" E	36° 01' 23.044" N	Powerhouse
3	71° 44' 09.220" E	36° 01' 13.780" N	Powerhouse
4	71° 44' 13.980" E	36° 01' 12.146" N	Powerhouse
5	71° 44' 14.679" E	36° 01' 09.473" N	Powerhouse
6	71° 44' 19.845" E	36° 01' 09.888" N	Powerhouse
7	71° 44' 18.712" E	36° 01' 16.050" N	Powerhouse
8	71° 44' 16.143" E	36° 01' 16.050" N	Powerhouse

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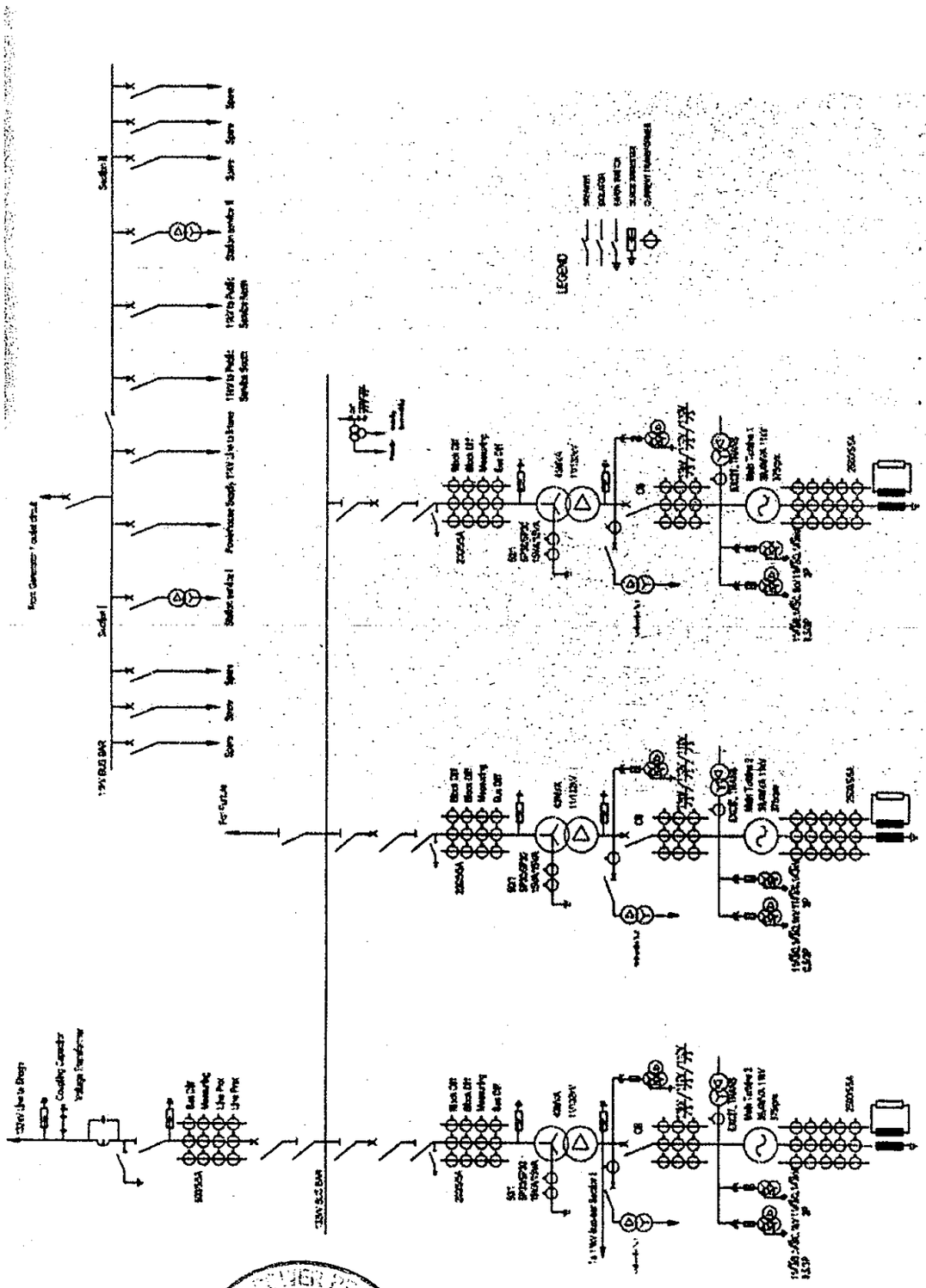
Generation Licence
Master Hydro (Private) Limited
Arkari Gol Hydel Power Plant
On Arkari Gol River, near Uchhatur village, District Chitral
In the Province of Khyber Pakhtunkhwa

Single Line Diagram (Electrical) 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/Master Hydro (Private) Limited (MHPL) shall be dispersed to the load centre of PESCO.

(2). Regarding interconnection arrangement, the Authority has observed that the hydel project of MHPL will be located in district Chitral 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 this regard, PEDO is in process of getting conducted the power evacuation studies for the hydel projects to be located in Chitral corridor for which hiring of consultant is in advance stage.

(3). In view of the above, the Authority while considering the fact that the company cannot carry out the required study on individual basis directs MHPL to apply for modification in its generation licence once Grid Interconnection Study is finalized and approved by the relevant agency.

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Detail of Generation Facility/Hydel Power Plant of the Licensee

(A). General Information

(i).	Name of the Licensee/ Company	Master Hydro (Private) Limited
(ii).	Registered/Business Office of the Licensee/ Company	Furniture Market, Dir, District Upper Dir, in the Province of Khyber Pakhtunkhwa
(iii).	Location of the Generation Facility	Near village of Uchhatur, District Chitral in the Province of Khyber Pakhtunkhwa
(iv).	Type of Generation Facility	Run of River Hydel Power Plant

(B). Hydrology

(i).	Name of River	Arkari Gol
(ii).	Catchment area	1,036 km^2
(iii).	Full Reservoir Level (FRL)	2,190 m.a.s.l.
(iv).	Mean Monthly Flows	5.80 m^3/s to 52.70 m^3/s
(v).	Design Flow (Q_{30})	36 m^3/s for power yield
(vi).	Flood Discharge (Q_{100} year)	562 m^3/s
(vii).	Peak Flood Discharge	571 m^3/s
(viii).	Design Flood Discharge (Q_{1000} years)	571 m^3/s

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(C). Diversion Dam

(i).	Type	Free flow ogee type Weir
(ii).	Design Flood Elevation	2546.1 m.a.s.l.
(iii).	Ogee Crest Elevation	2192 m.a.s.l.
(iv).	Total Height of Weir	26 m
(v).	Length of overflow section	40.0 m
(vi).	Height of overflow section	8.3 m
(vii).	Size of Stilling Basin	90 m
(viii).	Design flood (Q_{1000} years)	562 m^3/s
(ix).	Bridge Length	N/A
(x).	Access Road Length	N/A

(D). Gated Section

(i).	No. of Under Sluices	02 No.
(ii).	Size of each Under Sluice	8 m x 12 m
(iii).	Nos. Of Piers	03

(E). Intake

(i).	Type	Lateral intake – Gate controlled
(ii).	Gate size	3.8 x 4.0 m

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(iii).	Nos. of gates	02

(F). Upstream Connecting Canal

(i).	Canal Length Length	60.5 m
(ii).	No. of Conduit	1 No.
(iii).	Conduit Size	60.5 m x 9.5 m

(G). Sand Trap

(i).	Size of chamber	100m×15m×21m (L×W×H)
(ii).	Nos. of chambers	3 Nos.
(iii).	Particle size to be settled	0.2 mm

(H). Connecting Channel Canal

(i).	Length	240 m
(ii).	Nos. of Canal	01 No.

(I). Headrace Tunnel

(i).	Length	6265 m
(ii).	Type	Horseshoe, Surface shotcrete
(iii).	Diameter	4.4 m
(iv).	Tunnel slope	0.3%
(v).	Tunnel invert level	2572.44 m.a.s.l

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(J). Surge Shaft

(i).	Height	75 m
(ii).	Type	Circular, Reinforced concrete lined
(iii).	Diameter (inner)	4.50 m
(iv).	Access Road Length	N/A

(K). Pressure Shaft

(i).	Type	Steel
(ii).	Length	296 m
(iii).	Diameter	3.10 m
(iv).	Thickness	Varies

(L). Pressure Tunnel

(i).	Type	Steel
(ii).	Length (3.0m Dia)	379m
(iii).	Thickness	Varies

(M). Tailrace

(i).	Type	Rectangular concrete channel
(ii).	Length	100 m

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(N). Power Facilities

(i).	Powerhouse	Open Powerhouse
(ii).	Dimensions	46.71 m X 19.40 m X 29.5 m (L x W x H)
(iii).	Gross Head	331.3 m
(iv).	Net Head	318 m
(v).	Installed capacity	102.063 MW
(vi).	No. of units	3 Nos.
(vii).	Type of Turbine	Verticle axis Pelton
(viii).	Turbine Capacity (each)	34.021 MW
(ix).	No. of Generators	3 No.
(x).	Generator Capacity (each)	33.4 MW
(xi).	Power factor	Lagging - 0.80 Leading – 0.95
(xii).	Average annual energy	378 GWh
(xiii).	Plant Factor	43.60%

(O). Other Information

(i).	COD of the Generation Facility/Hydel Power Plant	January 01, 2025 (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 34.021 MW Pelton Turbines)	102.063 MW
(2).	Total De-Rated Capacity of the Generation Facility/Hydel Power Plant at Mean Site Conditions (3 x 33.00 MW Pelton Turbines)	99.00 MW
(3).	Auxiliary Consumption of the Generation Facility/Hydel Power Plant (3 x 0.495 MW Pelton Turbines)	1.485 MW
(4).	Net Capacity of the Generation Facility/Hydel Power Plant at Mean Site Conditions Condition (3 x 32.505 MW Pelton Turbines)	97.515 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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