



Pakistan Water and Power Development Authority

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No. GMHO/CEHO/R-182 LPM / 1194-15

14.07.2022

Registrar (NEPRA)
NEPRA Tower, Attaturk Avenue (East)
G-5/1, Islamabad.

Subject: LICENSE PROPOSED MODIFICATION (LPM) - VII IN THE EXISTING
GENERATION LICENSE NO. GL (HYDEL)/05/2004 OF WAPDA
HYDROELECTRIC (CHANGE IN AUXILIARY CONSUMPTION LIMIT OF POWER
STATIONS).

Ref: Your office letter No. NEPRA/DG (Lic)/LAG-23/6141 dated 26.04.2022

It is apprised that WAPDA Hydroelectric holds Generation License No. GL /Hydel/05/2004 dated 03.11.2004 for Hydel Power Stations. Modification V was issued on 07.04.2020 for 24 No Hydel Power Stations with total installed capacity of 17367.96 MW. Presently, WAPDA's application for License Proposed Modification (VI) in its Generation License for the revision / change in the auxiliary consumption limits of its power stations and inclusion of Tarbela 5th Extension Hydropower Project (1530 MW) is being processed by NEPRA. After said Modification, the installed capacity of WAPDA Hydroelectric will be increased to 18,897.96 MW.

On behalf of WAPDA Hydroelectric, this office now intends to file an application for License Proposed Modification (LPM-VII), as directed by NEPRA vide its above referred letter for the inclusion of Mohmand Dam Hydropower Project (800 MW) in its Generation License. After inclusion of Mohmand Dam Hydropower Project (800 MW), the total installed capacity of WAPDA Hydroelectric, in Generation License will be increased to 19,697.96 MW (26 No Power Stations). Following documents for Mohmand Dam Hydropower Project are attached;

- i. Due Diligence Report (**Annex-I**)
- ii. Location Map of the Project and Project Layout Plan (**Annex-II**).
- iii. Single Line Diagram of the Power House & Station Auxiliary SLD (**Annex-III**)

The License Proposed Modification is accompanied with necessary attachments (**Annex-IV**) as required under NEPRA Licensing (Application & Modification Procedure) Regulations 1999. Authorization Letter / Power of Attorney to file the application for Modification No. VII in the Generation License is also attached (**Annex-V**). Affidavit, as per prescribed format on Stamp Paper, dully signed is enclosed (**Annex-VI**). A Cross Cheque No. 00000221 Dated 29.06.2022, amounting to Rs. 1,562,999/- as License Modification Fee has already been submitted vide letter dated 01.07.2022 (**Annex-VII**), please

DA/As above:

NADEEM IQBAL

NADEEM IQBAL 14/7/2022

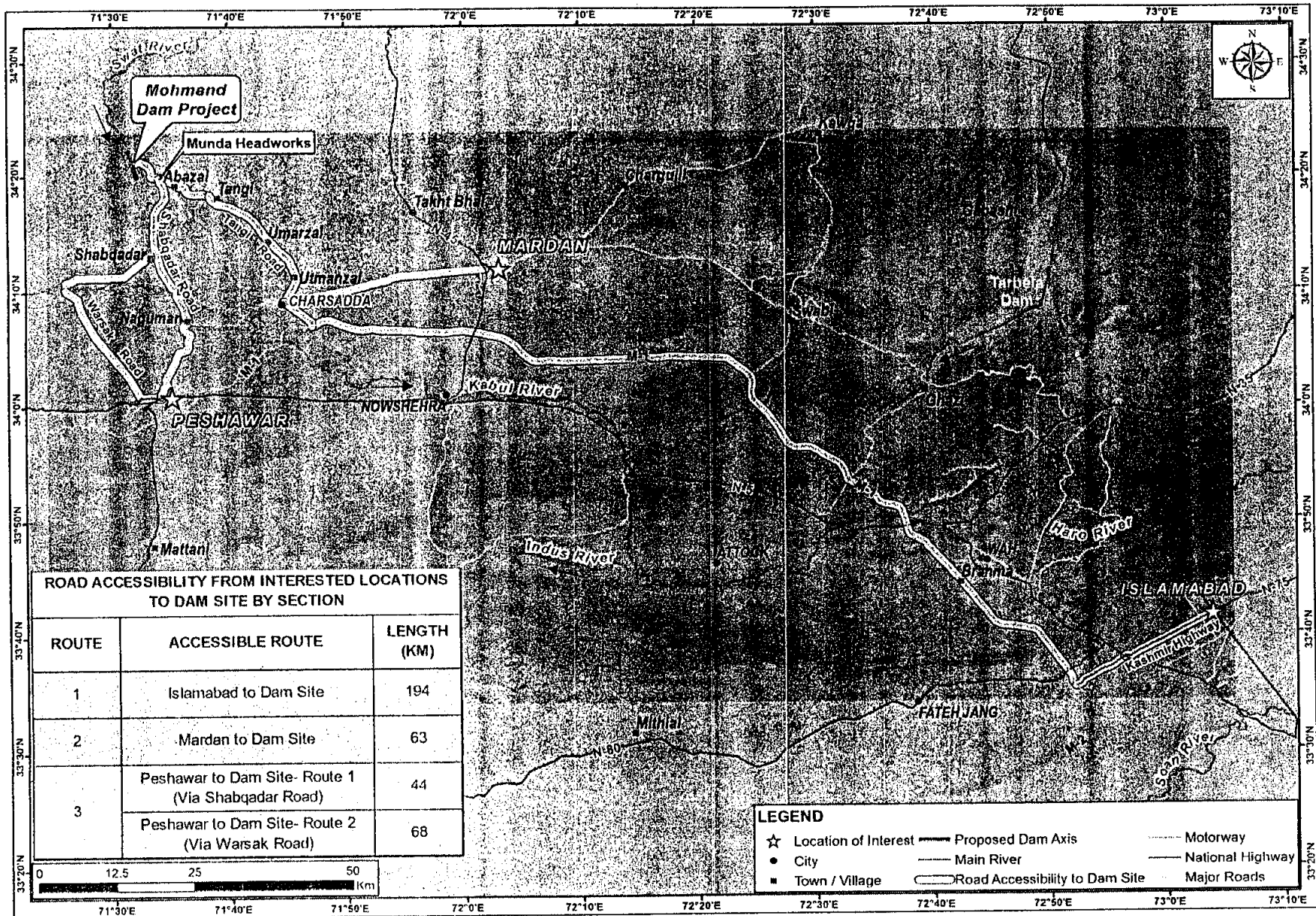
General Manager (Hydel) Operation

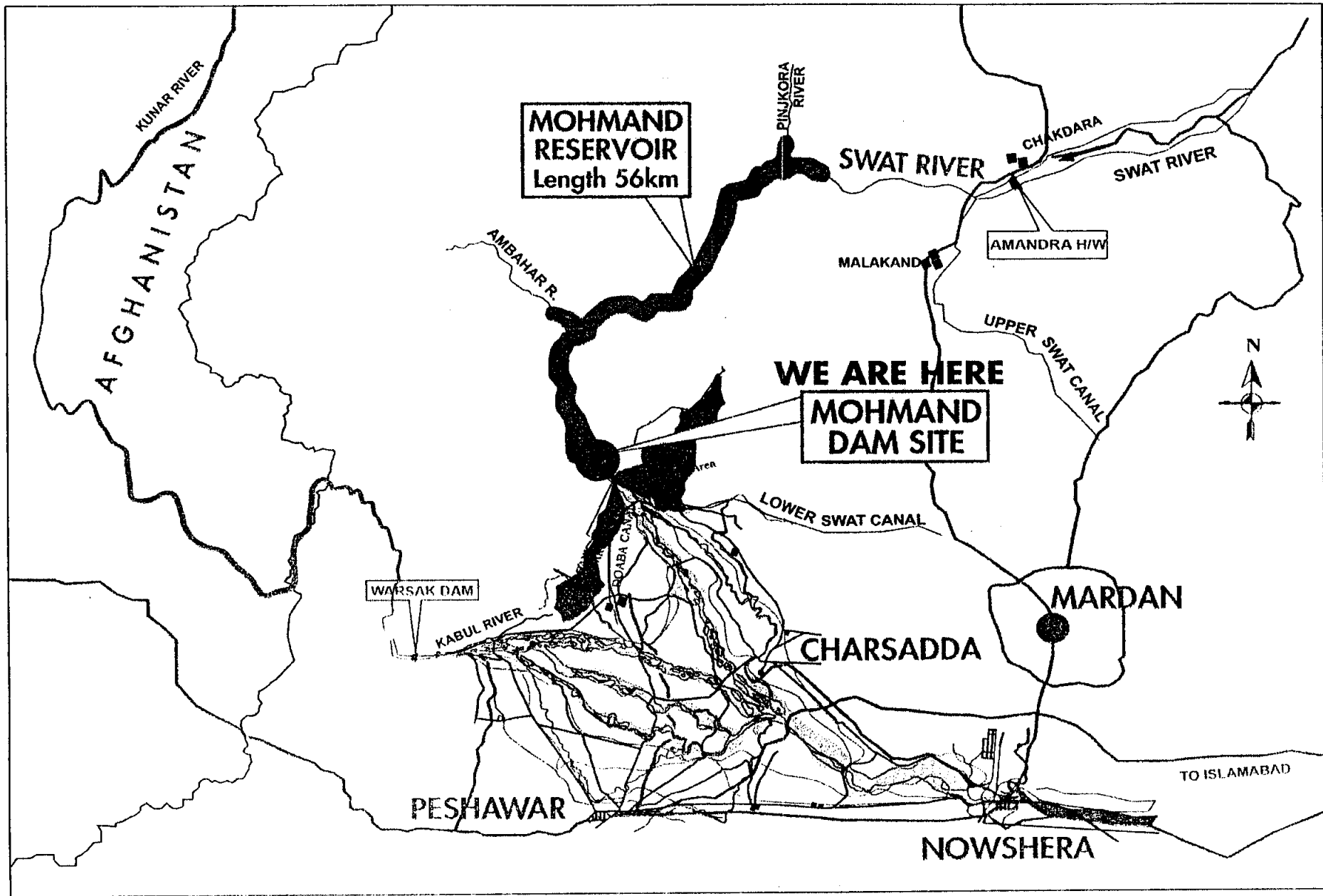
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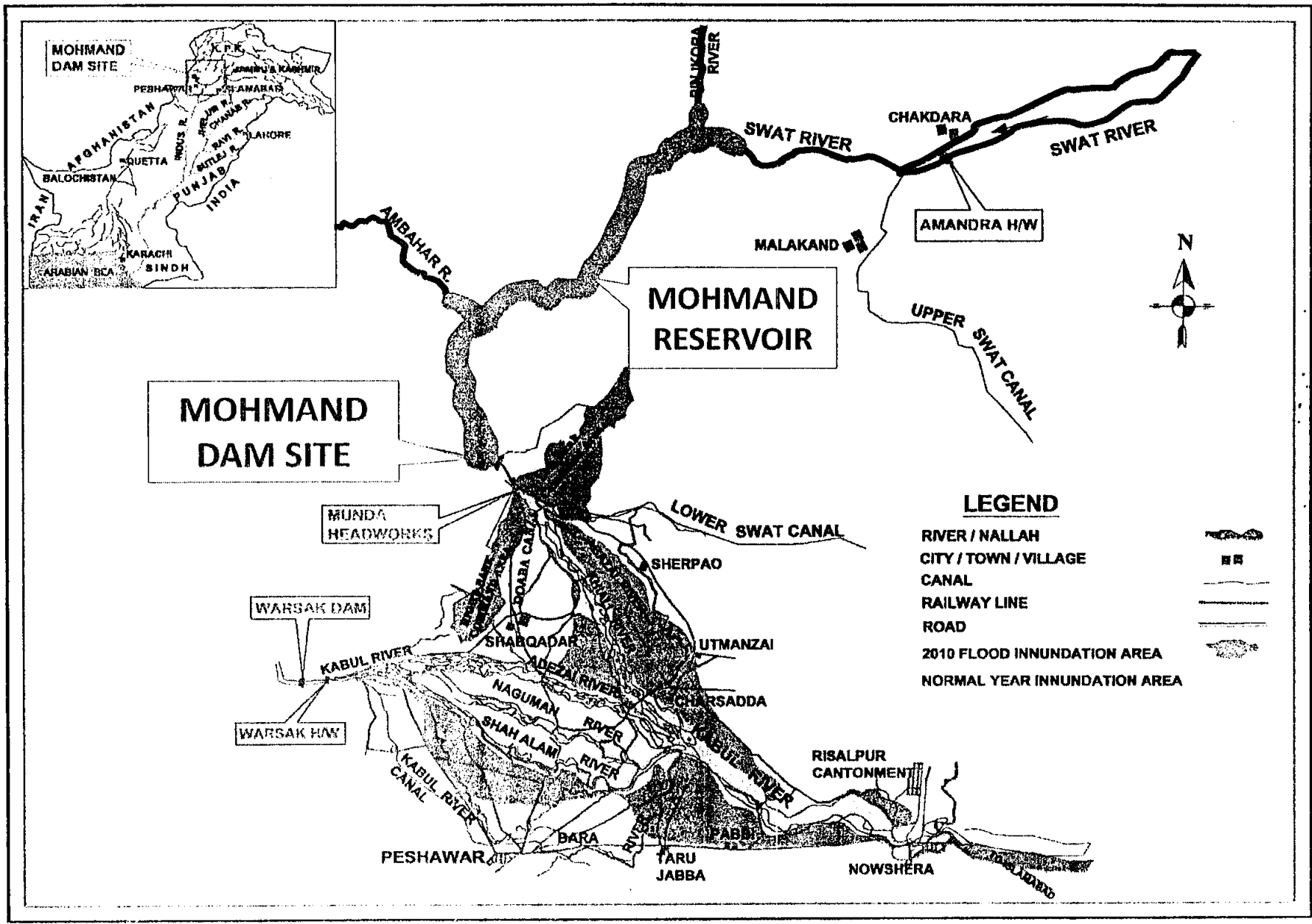
- Member (Power), Wapda House, Lahore.
- General Manager (Finance) Power, Wapda House, Lahore.
- SO to Member (Finance), Wapda House, Lahore.

Mohmand Dam Hydropower Project

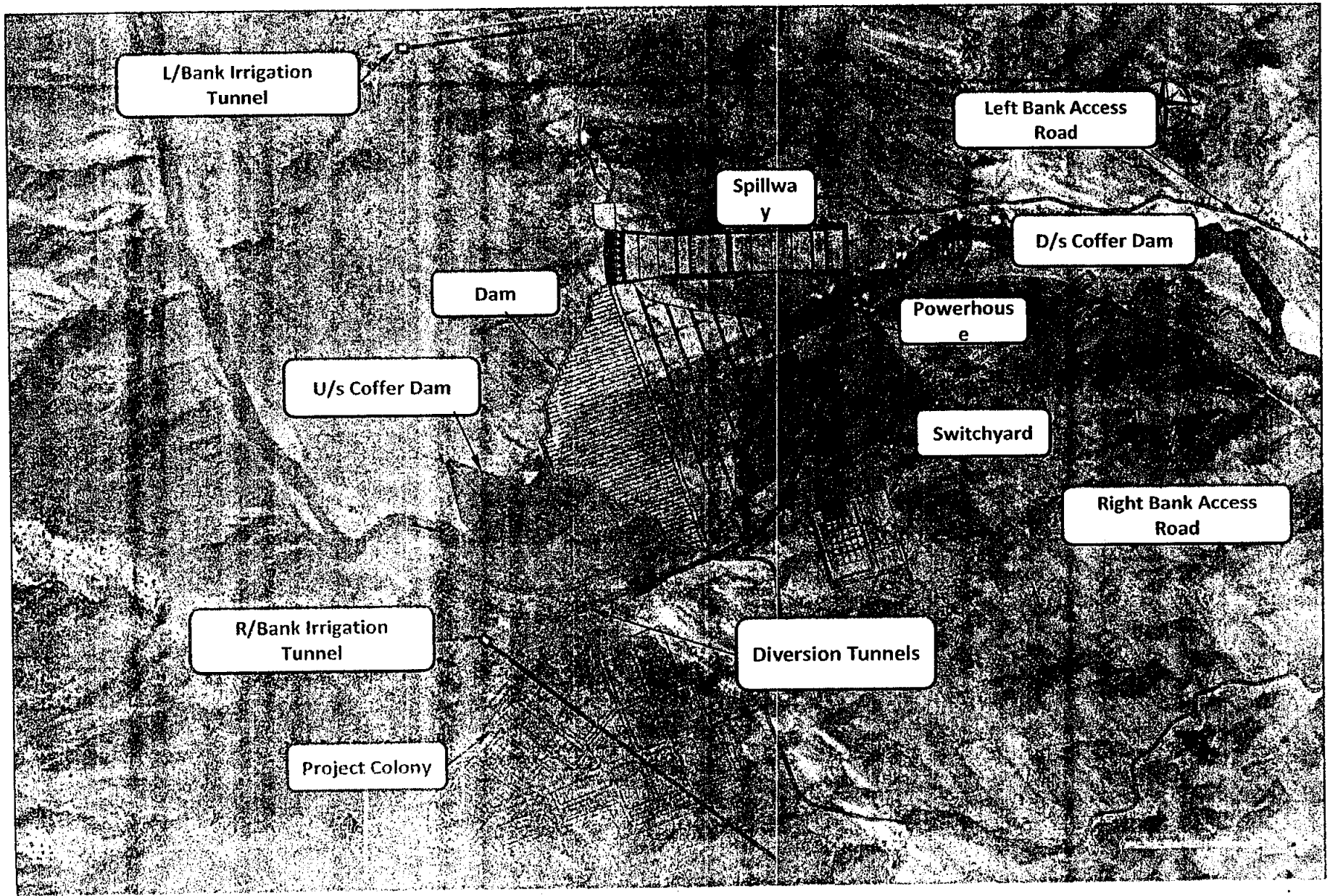
01	Location	On Swat River approximately 45 km from Peshawar, 05 km upstream of Munda Headworks in Mohmand Tribal District Khyber Pakhtunkhwa.		
02	Plant	Type		Total Capacity
		Peaking Hydro Power Project/ Storage Reservoir		800 MW
03	Head	Rated	Maximum	
		162.5	188.7 m	
04	Technology	Francis, vertical shaft type		
05	Tunnel	No		Length
		<u>Headrace Tunnel</u>		888.83 m (including Manifold and Penstock)
		Concrete lined = 474.41 m Steel Lined = 414.42 m		
Penstock		Unit#1 = 102.902 m Unit#2 = 83.005 m Unit#3 = 63.362 m Unit#4 = 39.647 m		13.2 to 12.30 m
06	Minimum expected useful life of the generation facility	30 years.		
07	Peaking/Base Operation	The plant designed for variable load conditions under different net heads as well as for daily peak operation over a period of up to 04 hours at maximum available station output.		
08	Plant Characteristics	Generator Voltage		Power Factor
		18 KV (+/- 10 %)		0.8 (Lagging)/0.9 (leading)
		Frequency = 50 Hz (+/- 05%).		Automatic Control: Control and Instrumentation (C&I) systems (DCS) and SCADA systems.
09	Length of transmission lines	<ol style="list-style-type: none"> 1. A 220 KV Double Circuit (D/C) transmission line, approx. 58 km long, on twin bundled Rail conductor from Mohmand HPP to Nowshera Industrial substation. 2. A 220 KV Double Circuit (D/C) transmission line, approx. 52 km long, on twin bundled Rail conductor from Mohmand HPP to Jamrud substation. 		
10	220 KV circuit breaker	The circuit breaker will be 220 KV SF6 Type.		
11	Station Auxiliary Consumption	5.6 MW		





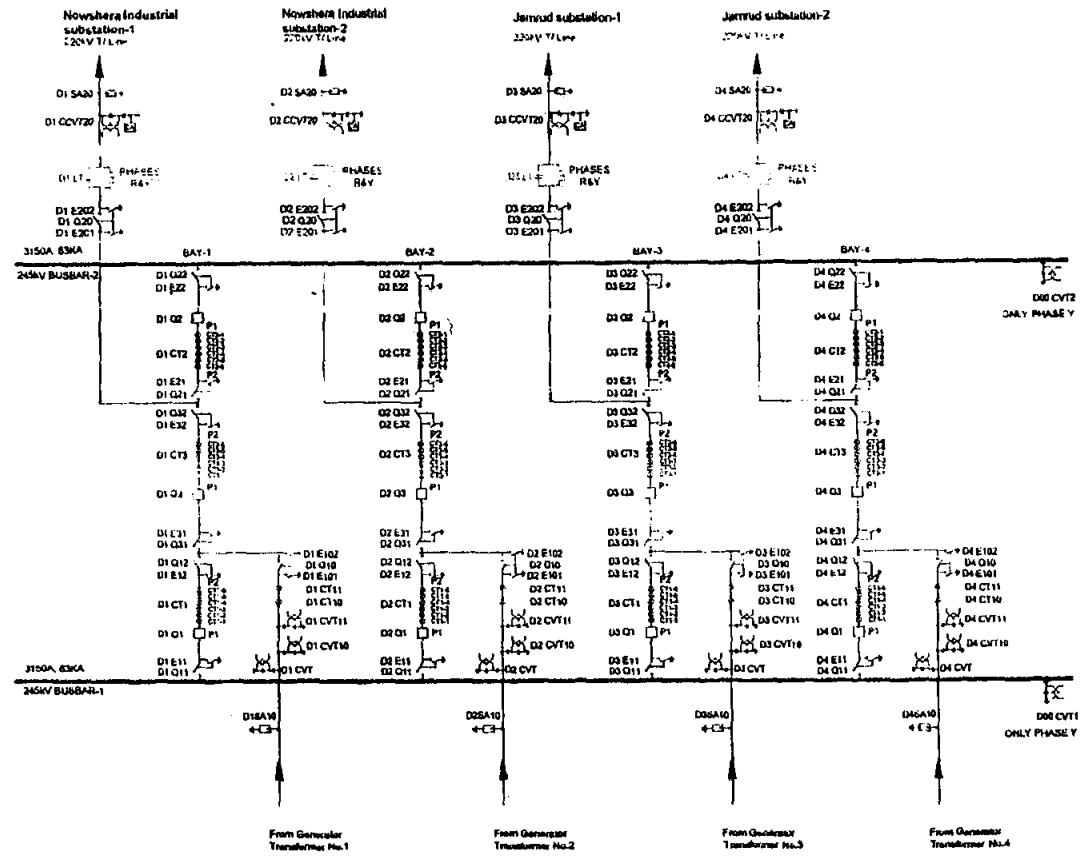


PROJECT LAYOUT



MAIN SINGLE LINE DIAGRAM OF 22KV SWITCHYARD

REV/NO	DATE	DESIGNED	CHECKED	EXAMINED	DESCRIPTION
01	2021.01.28	VI DEWA	SAIB DRAGICH	SAIB ALJAZ	
02	2021.01.28	VI DEWA	SAIB DRAGICH	SAIB ALJAZ	
03	2021.01.28	VI DEWA	SAIB DRAGICH	SAIB ALJAZ	
04	2021.01.28	VI DEWA	SAIB DRAGICH	SAIB ALJAZ	
05	2021.01.28	VI DEWA	SAIB DRAGICH	SAIB ALJAZ	
06	2021.01.28	VI DEWA	SAIB DRAGICH	SAIB ALJAZ	
07	2021.01.28	VI DEWA	SAIB DRAGICH	SAIB ALJAZ	



LEGEND:

SYMBOL	DESCRIPTION
[Symbol]	Circuit Breaker
[Symbol]	Disconnecting Switch with Surge Arresting Switch (NOTOR OPERATED)
[Symbol]	Disconnecting Switch with Double Earthing Switch (NOTOR OPERATED)
[Symbol]	Current Transformer
[Symbol]	Capacitor Voltage Transformer (CVT)
[Symbol]	Coupling Capacitor Voltage Transformer (CCVT) with Power Accessories
[Symbol]	Surge Arrester
[Symbol]	Line Line
[Symbol]	SCALE OF WORK UNDER THIS PROJECT

NOTES:
After finalization and approval of single line diagram by the Engineer, the same drawing shall be forwarded to the NITDC for their comments, finalization and approval. Switchyard equipment designation shall also be finally selected based on NITDC approval.

MOHAMMAD HYDROPOWER PROJECT	
DESIGNED: VI DEWA CHECKED: SAIB ALJAZ EXAMINED: SAIB ALJAZ SCALE: As shown	SHEET NO: 1/2 SHEET TOTAL: 2/2 SHEET TOTAL: 2/2 SHEET TOTAL: 2/2 SHEET TOTAL: 2/2
MAIN SINGLE LINE DIAGRAM OF 22KV SWITCHYARD (1/2) 22KV 开关主接线图 (1/2)	
DRAWING NO: 14744-2021-01-01-01	

LIST OF MAIN EQUIPMENT AND MATERIALS		
SN	Name	Parameter
D1~D4 SA10	Surge Arrester	198kV
D1~D4 CVT	Capacitor Voltage Transformer	Winding 1: (220/√3)kV(110/√3)V,110V,0.2+3P,100VA; Winding 2: (220/√3)kV(110/√3)V,110V,3P,100VA;
D1~D4 CVT10	Capacitor Voltage Transformer	(220/√3)(0.11+3)kV, 0.2,50VA
D1~D4 CVT11	Capacitor Voltage Transformer	(220/√3)(0.11+3)kV, 0.2,50VA
D1~D4 L1	Current Transformer	3000-2400/150/25,15VA
D1~D4 CT11	Current Transformer	3000-2400/150/25,15VA
D1~D4 Q10	Disconnecting Switch	245kV, 63kA, 3150A
D1~D4 L10	Earthing Switch	245kV, 63kA
D1~D4 Q11	Disconnecting Switch	245kV, 63kA, 3150A
D1~D4 L11	Earthing Switch	245kV, 63kA
D1~D4 Q1	Circuit Breaker	245kV, 63kA, 3150A
D1~D4 CT1	Current Transformer	3000-2400-1200-600/1A, 5P20/5P20-5P20/5P20,2x0.2x, 30/30/30/30/15/15VA
D1~D4 Q12	Disconnecting Switch	245kV, 63kA, 3150A
D1~D4 L12	Earthing Switch	245kV, 63kA
D1~D4 Q13	Disconnecting Switch	245kV, 63kA, 3150A
D1~D4 E31	Earthing Switch	245kV, 63kA
D1~D4 Q3	Circuit Breaker	245kV, 63kA, 3150A
D1~D4 CT3	Current Transformer	3000-2400-1200-600/1A, 5P20/5P20-5P20/5P20,2x0.2x, 30/30/30/30/15/15VA
D1~D4 Q32	Disconnecting Switch	245kV, 63kA, 3150A
D1~D4 E32	Earthing Switch	245kV, 63kA
D1~D4 Q21	Disconnecting Switch	245kV, 63kA, 3150A
D1~D4 E21	Earthing Switch	245kV, 63kA
D1~D4 L12	Current Transformer	3000-2400-1200-600/1A, 5P20/5P20-5P20/5P20,2x0.2x, 15/15/30/30/30/30VA
D1~D4 Q2	Circuit Breaker	245kV, 63kA, 3150A
D1~D4 Q22	Disconnecting Switch	245kV, 63kA, 3150A
D1~D4 L22	Earthing Switch	245kV, 63kA
D1~D4 Q20	Disconnecting Switch	245kV, 63kA, 3150A
D1~D4 E20	Earthing Switch	245kV, 63kA
D1~D4 LT	Line Trap	1150A, 61kA
D1~D4 CCVT20	Coupling Capacitor Voltage Transformer	Winding 1: (220/√3)kV(110/√3)V,110V,0.2+3P,100VA; Winding 2: (220/√3)kV(110/√3)V,110V,3P,100VA;
D1~D4 SA20	Surge Arrester	198kV
D00 CVT1	Capacitor Voltage Transformer	Winding 1: (220/√3)kV(110/√3)V,110V,0.2+3P,100VA; Winding 2: (220/√3)kV(110/√3)V,110V,3P,100VA;
D00 CVT2	Capacitor Voltage Transformer	Winding 1: (220/√3)kV(110/√3)V,110V,0.2+3P,100VA; Winding 2: (220/√3)kV(110/√3)V,110V,3P,100VA;
D1~D4 CB	Composite bundle	3x1590mm composite bundle
D1~D4 ATC	Aluminum tubular conductor	200x10mm

CURRENT TRANSFORMER (D1-D4 CT1)

CODE NO.	APPLICATION	RATIO	CLASS	BURDEN
CT1A	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT1B	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT1C	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT1D	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT1E	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT1F	INSTRUMENT	3000/2400-1200/600/1A	0.2B	20VA

CURRENT TRANSFORMER (D1-D4 CT3)

CODE NO.	APPLICATION	RATIO	CLASS	BURDEN
CT3A	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT3B	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT3C	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT3D	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT3E	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT3F	INSTRUMENT	3000/2400-1200/600/1A	0.2B	20VA

CURRENT TRANSFORMER (D1-D4 CT2)

CODE NO.	APPLICATION	RATIO	CLASS	BURDEN
CT2A	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT2B	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT2C	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT2D	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT2E	PROTECTION	3000/2400-1200/600/1A	0.2B	20VA
CT2F	INSTRUMENT	3000/2400-1200/600/1A	0.2B	20VA

METERING CURRENT TRANSFORMER (D1-D4 CT101-D4 CT11)

CODE NO.	APPLICATION	RATIO	CLASS	BURDEN
CT10A	METERING	3000/2400-1200/600/1A	0.2B	20VA

VOLTAGE TRANSFORMER

NO.	DESCRIPTION	RATIO	CLASS	BURDEN
1	220/110V	220/110	0.2B	20VA
2	220/110V	220/110	0.2B	20VA
3	220/110V	220/110	0.2B	20VA
4	220/110V	220/110	0.2B	20VA
5	220/110V	220/110	0.2B	20VA
6	220/110V	220/110	0.2B	20VA
7	220/110V	220/110	0.2B	20VA
8	220/110V	220/110	0.2B	20VA
9	220/110V	220/110	0.2B	20VA
10	220/110V	220/110	0.2B	20VA

22KV SWITCHYARD

NO.	DESCRIPTION	QUANTITY
1	ISOLATING SWITCH VOLTAGE CLASS 24KV	200
2	ISOLATING SWITCH VOLTAGE CLASS 24KV	100
3	ISOLATING SWITCH	100
4	ISOLATING SWITCH VOLTAGE CLASS 24KV	100
5	ISOLATING SWITCH VOLTAGE CLASS 24KV	100
6	ISOLATING SWITCH VOLTAGE CLASS 24KV	100
7	ISOLATING SWITCH VOLTAGE CLASS 24KV	100
8	ISOLATING SWITCH VOLTAGE CLASS 24KV	100
9	ISOLATING SWITCH VOLTAGE CLASS 24KV	100
10	ISOLATING SWITCH VOLTAGE CLASS 24KV	100

ALL ALUMINIUM STRANDED CONDUCTOR

NO.	DESCRIPTION	QUANTITY
1	CONDUCTOR TYPE	200x10mm
2	CONDUCTOR TYPE	200x10mm
3	CONDUCTOR TYPE	200x10mm

REVISED	DATE	DESIGNED	CHECKED	ISSUED	DESCRIPTION
D1	2011.12.10	YI DEMU	YI DEMU	YI DEMU	22KV SINGLE LINE DIAGRAM OF 22KV SWITCHYARD (22)
D2	2011.12.10	YI DEMU	YI DEMU	YI DEMU	22KV SINGLE LINE DIAGRAM OF 22KV SWITCHYARD (22)
D3	2011.12.10	YI DEMU	YI DEMU	YI DEMU	22KV SINGLE LINE DIAGRAM OF 22KV SWITCHYARD (22)
D4	2011.12.10	YI DEMU	YI DEMU	YI DEMU	22KV SINGLE LINE DIAGRAM OF 22KV SWITCHYARD (22)

PAKISTAN WATER AND POWER DEVELOPMENT AUTHORITY

MOHAMMAD DAM CONSULTANTS GROUP

CGGC-DESCON Joint Venture

MOHAMMAD HYDROPOWER PROJECT

MAIN SINGLE LINE DIAGRAM OF 22KV SWITCHYARD (22)

22KV 开关站主接线图 (2/2)

DATE: 2011.12.10

DESIGNED BY: YI DEMU

CHECKED BY: YI DEMU

ISSUED BY: YI DEMU

I. Text of Proposed Modification

A. NEPRA granted Generation License No. GL (Hydel)/05/2004 Modification-V to WAPDA Hydroelectric on April 07, 2020 for twenty-four (24) Hydel Power Stations having total installed capacity of 17367.96 MW. Presently, License Proposed Modification (VI) in its Generation License for the revision / change in the auxiliary consumption limits of its power stations and inclusion of Tarbela 5th Extension Hydropower Project (1530 MW) is being processed by NEPRA. After Modification (VI), the installed capacity of WAPDA Hydroelectric will be increased to 18,897.96 MW as per following;

i.	Tarbela	3478 MW
ii.	Mangla	1000 MW
iii.	Warsak	242.96 MW
iv.	Ghazi Barotha	1450 MW
v.	Chashma	184 MW
vi.	Renala	1.1 MW
vii.	Chichoki	13.2 MW
viii.	Nandipur	13.8 MW
ix.	Shadiwal	13.5 MW
x.	Rasul	22 MW
xi.	Dargai	20 MW
xii.	Chitral	1 MW
xiii.	Kurram Garhi	4 MW
xiv.	Gomal Zam	17.40 MW
xv.	Jinnah	96 MW
xvi.	Allai Khwar	121 MW
xvii.	Duber Khwar	130 MW
xviii.	Khan Khwar	72 MW
xix.	Tarbela, 4 th Extension	1410 MW
xx.	Keyal Khwar	128 MW
xxi.	Golen Gol	108 MW
xxii.	Jabban	22 MW
xxiii.	Diamer Basha	4500 MW
xxiv.	Dasu	4320 MW
xxv.	Tarbela 5 th Extension	1530 MW
	Total	18,897.96 MW

B. "WAPDA Hydroelectric has requested for further modification in its Generation License (Modification-VII) for inclusion of Mohmand Dam Hydropower Project (800 MW). The revised Schedule II of Proposed Modification VII is attached.

SCHEDULE-II
(Modified / Revised)

Sr. No.	Power Station	Installed Capacity (MW)	Auxiliary Consumption (MW)	Net Capacity (MW)
1	Hydel Power Station Tarbela	3478	4.0	3474
2	Hydel Power Station Mangla	1000	3.0	997
3	Hydel Power Station Warsak	242.96	1.0	241.96
4	Hydel Power Station Ghazi	1450	3.0	1447
5	Hydel Power Station Chashma	184	0.9	183.1
6	Hydel Power Station Renala	1.1	0.1	1
7	Hydel Power Station Chichoki	13.2	0.3	12.9
8	Hydel Power Station Nandipur	13.8	0.3	13.5
9	Hydel Power Station Shadiwal	13.5	0.3	13.2
10	Hydel Power Station Rasul	22	0.4	21.6
11	Hydel Power Station Dargai	20	0.4	19.6
12	Hydel Power Station Chitral	1	0.1	0.9
13	Hydel Power Station Kurram Garhi	4	0.1	3.9
14	Hydel Power Station Gomal Zam	17.4	0.4	17
15	Hydel Power Station Jinnah	96	0.6	95.4
16	Hydel Power Station Allai Khwar	121	0.5	120.5
17	Hydel Power Station Duber Khwar	130	0.5	129.5
18	Hydel Power Station Khan Khwar	72	0.5	71.5
19	Hydel Power Station Tarbela 4 th , Extension	1410	3.0	1407
20	Hydel Power Station <i>Keyal Khwar</i>	128	0.3	127.7
21	Hydel Power Station Golen Gol	108	0.3	107.7
22	Hydel Power Station Jabban	22	0.2	21.8
23	Hydel Power Station <i>Diamer</i>	4500	2.0	4498
24	Hydel Power Station <i>Dasu</i>	4320	2.0	4318
25	Hydel Power Station Tarbela 5 th Extension	1530	4	1526
26	Hydel Power Station Mohmand Dam	800	5.6	794.4
Grand Total		19,697.96	33.8	19,664.16

II. The Statement of Reason in Support of Modification in Generation License

- WAPDA Hydroelectric holds Generation License No. GL /Hydel/05/2004 dated 03.11.2004 for Hydel Power Stations. Modification V was issued on 07.04.2020 for 24 No Hydel Power Stations with total installed capacity of 17367.96 MW. Presently, WAPDA's application for License Proposed Modification (VI) in its Generation License for the revision / change in the auxiliary consumption limits of its power stations and inclusion of Tarbela 5th Extension Hydropower Project (1530 MW) is being processed by NEPRA. After said Modification, the installed capacity of WAPDA Hydroelectric will be increased to 18,897.96 MW.
- Mohamad Dam Hydropower Project (800 MW) will be a source of cheap electricity in the National Grid. It will add neat & clean energy that will be generated through Hydro Potential at Mohmand Dam thus reducing the CO₂ emissions. It will provide create job opportunities for the local community thus uplifting the life standards. The CSR measures will uplift the life style of the whole region. The project will be also he helpful in the GDP growth of the country.

III. A statement of the impact on the tariff, quality of service and performance by the licensee of its obligations under the license.

- As for quality of service and performance is concerned, WAPDA Hydroelectric is already maintaining highest level of performance and quality of services which can be confirmed from the plant availability factor of existing Hydel Power Stations. The same spirit will be followed during the O&M of Mohmand Dam Hydropower Project.
- Through this modification, a cheap source of electricity will be added in the national grid that will generate and provide electricity to the consumers at a very reasonable / affordable rates during the life span of the projects i.e. 30 years. The exact tariff calculations will be made at the time of filing Tariff Petition of the project.
- After this modification, WAPDA's desired performance delivery levels shall be stretched and become compatible with industry standards. Furthermore, the issue of non-conformity with regards to actual auxiliary consumption limits and NEPRA's recognized auxiliary consumption values, mentioned in Modification-IV of the Generation License granted to WAPDA, shall also be addressed / settled which currently has been consuming significant efforts and resources of the Licensee unnecessarily.