



**PERFORMANCE AUDIT REPORT  
ON  
TARBELA 4<sup>TH</sup> EXTENSION  
HYDROPOWER PROJECT  
TARBELA  
AUDIT YEAR 2019-20**

**AUDITOR GENERAL OF PAKISTAN**



## PREFACE

The Auditor General conducts audits subject to Article 169 and 170 of the Constitution of the Islamic Republic of Pakistan 1973, read with sections 8 and 12 of the Auditor General's (Functions, Powers and Terms and Conditions of Service) Ordinance 2001. The Performance Audit of Tarbela 4<sup>th</sup> Extension Hydropower Project was carried out accordingly.

The CDWP on November 18, 2019, while recommending the 1<sup>st</sup> revised PC-I of the Tarbela 4<sup>th</sup> Extension Hydropower Project for consideration of ECNEC, directed the Ministry of Water Resources to refer the project to AGP to carry out a comprehensive Performance Audit of the project in the light of the findings of the Inquiry Committee constituted by the Prime Minister of Pakistan. Further, while approving the 1<sup>st</sup> revised PC-I of the project on November 27, 2019, ECNEC also endorsed the recommendations of CDWP.

The Directorate General Audit Water Resources conducted the performance audit of the Tarbela 4<sup>th</sup> Extension Hydropower Project, in the light of the findings of the Inquiry Committee constituted by the Prime Minister of Pakistan during April to June 2020 with a view to report significant findings to the relevant stakeholders. Audit primarily examined the economy, efficiency and effectiveness aspects of the project, achievement of its objectives as per PC-I and the issues highlighted by the Inquiry Committee. In addition, Audit also assessed, on test check basis whether the management complied with applicable laws, rules and regulations in managing the project.

Audit findings indicate the need for taking specific actions that, if taken, will help the management to implement better project management practices in future. Audit observations have been finalized in the light of discussion in the DAC meeting.

The Audit Report is submitted to the President in pursuance of the Article 171 of the Constitution of the Islamic Republic of Pakistan, 1973 for causing it to be laid before both Houses of Majlis-e-Shoora [Parliament].

**-sd-**

Dated: 28 FEB 2022  
Islamabad

**(Muhammad Ajmal Gondal)**  
Auditor General of Pakistan



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## **Abbreviation and Acronyms**

AGP	Auditor General of Pakistan
BoQ	Bill of Quantity
CCC	Central Contract Cell
CDWP	Central Development Working Party
CEA	Chief Engineering Advisor
CFFC	Chairman Federal Flood Commission
CNY	Chinese Yuan Renminbi
CO	Change Order
COD	Commercial Operation Date
D/S	Downstream
DAC	Departmental Accounts Committee
DLP	Defect Liability Period
DTG	Draft Tube Gates
E&M	Electrical and Mechanical
EAD	Economic Affairs Division
EAR	Erection All Risk
ECC	Economic Coordination Committee
ECNEC	Executive Committee of the National Economic Council
FEC	Foreign Exchange Component
FIA	Federal Investigation Agency
GCC	General Condition of Contract
GM	General Manager
GoP	Government of Pakistan
GWh	Giga Watt hours
IBRD	International Bank for Reconstruction and Development
IC	Investigation Committee
IDA	International Development Agency
IDC	Interest During Construction
IPC	Interim Payment Certificate
IPoE	Independent Panel of Experts
IRSA	Indus River System Authority
JS(W)	Joint Secretary (Water)
LD	Liquidated Damages

MPC	Milestone Payment Certificate
MW	Mega Watt
NAB	National Accountability Bureau
NJHP	Neelum Jhelum Hydropower Project
NOL	No Objection Letter
O&M	Operation & Maintenance
PAC	Public Accounts Committee
PAW	Performance Audit Wing
PC	Particular Condition
PCCCL	M/s Power Construction Corporation of China Ltd.
PC-I	Planning Commission Performa - I
PD	Project Director
PPA	Power Purchase Agreement
PPRA	Public Procurement Regulatory Authority
PSDP	Public Sector Development Programme
PSR	Preliminary Survey Report
RCCS	Revised Coordinated Construction Schedule
RTR	Reliability Test Run
T4CJV	Tarbela 4 Consultant Joint Venture
T4HPP	Tarbela 4 <sup>th</sup> Extension Hydropower Project
TOR	Terms Of Reference
TSC	Technical Sub-Committee
US\$	United States Dollar
VO	Variation Orders
VO-R	Variation Order – Revision
WAPDA	Water And Power Development Authority
WB	World Bank
WHT	Withholding Tax

## EXECUTIVE SUMMARY

Tarbela 4<sup>th</sup> Extension Hydropower Project (T4HPP) is located at Tarbela Dam on the Indus River 110 KM from Islamabad in Swabi and Haripur districts of Khyber Pakhtunkhwa Province, Pakistan. Tarbela Dam has five irrigation tunnel outlets. Existing hydropower generation facilities having capacity of 3,478 MW are installed on tunnels 1, 2 and 3 of Tarbela Dam. T4HPP was designed to construct and install three new turbines of 470 MW each on the 4<sup>th</sup> irrigation tunnel with the overall development objective of enhancing the power generation capacity from 3,478 MW to 4,888 MW. The project comprised of gross capacity of 1,410 MW for providing about 3,840 GWh units annually of least-cost low-carbon renewable energy.

The original PC-I of the project was approved by the Executive Committee of National Economic Council (ECNEC) on August 16, 2012 with total cost of Rs.83,601.04 million and implementation period of six years. The 1<sup>st</sup> revised PC-I of the project was approved by the ECNEC on January 06, 2020 at the cost of Rs.122,977 million with implementation period from April, 2012 to December, 2022. However, the project was inaugurated on March 10, 2018 by starting up the Unit No.17 just for three minutes only, when the reservoir was at dead level. The Prime Minister's office constituted an Investigation Committee (IC) to inquire the premature inauguration of the 1,410 MW T4HPP in March, 2018.

The Central Development Working Party (CDWP) on November 18, 2019, while recommending the 1<sup>st</sup> revised PC-I of the project for consideration by ECNEC, directed the Ministry of Water Resources to refer the project to Auditor General of Pakistan (AGP) to carry out a comprehensive performance audit of the project in the light of the findings of the IC constituted by the Prime Minister of Pakistan. ECNEC also endorsed the recommendations of CDWP dated November 27, 2019 while approving the 1<sup>st</sup> revised PC-I.

IC submitted its report dated February 22, 2019 with following findings and conclusions:

- a. IC was of the view that project was inaugurated before the completion of all formalities;

- b. It was concluded by the IC from the statements of Member Power, Advisor Projects WAPDA, Chief Engineer (O&M) and the Project Director, T4HPP that the date of inauguration was made without their consultation and not at the Authority level of WAPDA, rather, it was done at the level of Chairman, WAPDA;
- c. IC determined that total loss of US\$ 753.70 million occurred due to delay in completion of project, comprising of following:
  - i. Generation loss of US\$ 350 million estimated and projected by WAPDA for the years 2017 & 2018 respectively;
  - ii. Loss of US\$ 48 million paid to the Civil Contractor on account of acceleration programme under VO2-R2;
  - iii. Loss of US\$ 5.7 million under CO-10 without completion of work, and
  - iv. Loss of Rs.70 million incurred by WAPDA to lift the Gates of Draft Tube stuck in the mud after refusal of the Civil Contractor.

Performance audit was initially conducted to evaluate the economy, efficiency and effectiveness of the project. Audit primarily examined that whether the project succeeded in achievement of its objective as per PC-I. In order to achieve main audit objective, audit examined the aspects of procurement, contract, financial and operations management as well as regulatory aspects of the project. Later on, the performance audit was re-conducted in the light of recommendations of IC. Audit endorses the conclusions drawn by the IC after examining the available record which are as follows:

- i. The Civil and E&M Contractor are directly responsible for the loss to the national exchequer on account of non-generation due to sticking of Draft Tube Gates as a result of event of puncturing of dewatering valves and non-removal of downstream cofferdam;
- ii. The Consultant was directly responsible for preparing the payment milestones under VO-2, which enabled the Civil Contractor to get 90% payment associated with the downstream cofferdam activity, and
- iii. Recovery of the losses as indicated above must be effected from the responsible.

Audit found that the project could not be completed within scheduled timelines. The acceleration programme initiated to cover up the delays in completion of the project could also not be implemented and failed to achieve its intended objective to achieve the commercial operation dates in 2017 for reaping the extra generation benefits from the high flood season of 2017.

The Cabinet Committee on Energy (CCE) during meeting held on September 15, 2016 directed the Chairman, WAPDA to take necessary measures for recovery of the payment made to the contractor for acceleration of works on the T4HPP for its completion by June, 2017. Later on, in next meeting of CCE held on December 19, 2016, it was clarified by Chairman, WAPDA that recovery of acceleration payments will lead to international litigation and delay of project beyond 2018. The CCE compromised its earlier directive with the intention to complete the project and also directed Chairman, WAPDA to take decision in this regard.

Consequently, the recovery for delays of acceleration programme could not be made and project was inaugurated on March 10, 2018 without fulfilling contractual formalities required for commissioning of the project. Premature inauguration resulted in significant generation and revenue losses, undue favour to the contractors in the shape of issuance of acceleration programme and variation orders as well as irregular payments in violation of contract clauses.

**a. Key Audit Findings**

Following are the key Audit findings:

**Financial Management**

- i. Extra financial burden on account of interest charges on IBRD loan due to non-utilization of withdrawn amount – Rs.152.79 million
- ii. Non-recovery of financial charges on account of extra contractual favour in the shape of financial assistance to the contractor – Rs.79.59 million

**Procurement and Contract Management**

- iii. Loss due to non-lifting of Draft Tube Gates (DTGs) – Rs.14,201.37 million

- iv. Irregular payment to contractors on account of acceleration programme despite delays in achievement of milestones – Rs.5,419.16 million
- v. Non-obtaining of renewed and additional performance guarantee by the E&M Contractor – Rs.3,178.31 million
- vi. Unjustified payment to contractor on account of execution of work based on current prices – Rs.1,999.87 million
- vii. Non-extension of insurance policies by E&M contractor – Rs.26,424.80 million

#### **Construction and Works**

- viii. Wasteful expenditure on installation of trash racks at lower level intakes – Rs.941.52 million

#### **Monitoring and Evaluation**

- ix. Generation loss due to non-achievement of commercial operations before high flow season of 2017 – Rs.36,470.40 million
- x. Undue favour to the contractor due to non-imposition of Liquidated Damages – Rs.3,125.74 million
- xi. Loss due to irregular payment on account of partial removal of downstream cofferdam – Rs.86.78 million
- xii. Premature inauguration of the project at dead reservoir level without performing Reliability Test Run (RTR) and completion of intake of Tunnel-4

#### **b. Recommendations**

Audit recommends the management to fix responsibilities upon contractors, consultants and project management for above mentioned financial, procurement and contractual mismanagement besides effecting recovery of irregular payments and making good of losses in the light of findings & conclusion of the IC.

Moreover, Audit also endorses recommendation of IC regarding the forensic audit of the T4HPP by an independent third party of international repute having no financial interest involved with WAPDA as per the TORs proposed by the IC.

## **1. INTRODUCTION**

Tarbela T4HPP is located at Tarbela Dam on the River Indus at Tarbela, 110 Kilometres from Islamabad in Swabi and Haripur districts of Khyber Pakhtunkhwa. The project was constructed on Irrigation Tunnel 4 of the Tarbela Dam. As per PC-I, installed capacity of the project was 1,410 MW with three (3) generating units of 470 MW each.

The main objective of this hydropower development project was to expand low cost / renewable electricity generation capacity of Tarbela Dam and reduce power shortages in the country.

The original PC-I of the project was approved by the ECNEC on August 16, 2012 at a total cost of Rs.83,601.04 million. The 1<sup>st</sup> revised PC-I of the project was approved by the ECNEC on November 27, 2019 at the cost of Rs.122,977 million with Foreign Exchange Component (FEC) of Rs.60,700 million with implementation period from April, 2012 to December, 2022. The FEC included loan from World Bank (IBRD & IDA). The contract was signed between Government of Pakistan (GoP) and World Bank on April 12, 2012.

The inauguration of the project was made on March 10, 2018 by synchronizing the Unit 17 for three minutes only without carrying out the RTR. At the time of inauguration, the project was not complete in all respects as the 1<sup>st</sup> revised PC-I was under approval. Therefore, the inauguration was considered as pre-mature. Later on, an IC was constituted by the Prime Minister's office to inquire the premature inauguration of the 1,410 MW T4HPP held in March, 2018.

IC was entrusted with the following TORs:

- a. To examine whether the project was inaugurated in time or before the completion of all formalities;
- b. To assess whether any loss to the national exchequer occurred due to inauguration of the project before time;
- c. To identify those who were responsible for making the decision of inauguration before completion of all formalities, if loss to the national exchequer occurred, and
- d. To fix responsibility and propose action.

In compliance, IC submitted its report dated February 22, 2019 with following findings and conclusions on the above TORs.

- d. The IC vide Para-7.14 of Findings and Conclusions was of the opinion that project was inaugurated before the completion of all formalities.
- e. All the members of the IC vide Para-7.16(xviii) of Findings and Conclusions have unanimously determined that total loss occurred during the execution of this project comes to US\$ 753.70 million:
  - i. Generation loss of US\$ 350 million estimated and projected by WAPDA for the years 2017 & 2018 respectively;
  - ii. Loss of US\$ 48 million paid to the Civil Contractor on account of acceleration programme under VO2-R2;
  - iii. Loss of US\$ 5.7 million under CO-10 without completion of work, and
  - iv. Loss of Rs.70 million incurred by WAPDA to lift the Gates of Draft Tube stuck in the mud after refusal of the Civil Contractor.
- f. As per Para-6.24 of Examination of TSC's Conclusions, it was determined from the statements of Member Power, Advisor Projects WAPDA, Chief Engineer (O&M) and the Project Director T4HPP that the date of inauguration was made without their consultation and not at the Authority level of WAPDA, rather, it was done at the level of Chairman, WAPDA.
- g. The IC members vide Para-7.20 of Findings and Conclusions were of the considered view that task of fixing exact responsibility requires detailed examination of record spread over a long period of time. However, concluded as follow:
  - i. The Civil and E&M Contractor are directly responsible for the loss occurred to the national exchequer on account of non-generation due to sticking of Draft Tube Gates as a result of event of puncturing of dewatering valve and non-removal of downstream cofferdam;
  - ii. The Consultant was directly responsible for preparing the payment milestones under VO-2, which enabled the Civil

Contractor to get 90% payment associated with the downstream cofferdam activity, and

- iii. Recovery of the losses as indicated above must be effected from the responsible.

The IC proposed to refer the case to the AGP for comprehensive performance audit in the light of findings of IC and further reference of the matter to FIA or NAB for decision of any criminal inquiry. Forensic audit of the T4HPP by an independent third party of the international repute was also recommended.

Contrary to the Findings and Conclusions of the IC, Ministry of Water Resources vide its letter No.2(2)/2017-HP dated February 25, 2019 submitted a complete different evaluation as crux of the matter against the Findings and Conclusions of the IC, which was as follow:

- a. It was concluded by the Committee that inauguration of the project was carried out after fulfilment of all contractual and technical formalities as mentioned in Para-7.03 of the report;
- b. As per Para-7 of 1<sup>st</sup> Technical Report by sub-committee submitted on September 23, 2018, the pre-requisite for commissioning of Unit 17 were fulfilled according to the contract and before inauguration. Whereas, in final IC report dated February 22, 2019, out of three technical members, two members have clearly established that project inauguration was made after completion of all the technical formalities;
- c. As per Para-7.13(c)(v) Sticking of Draft Tube Gates has no nexus with inauguration, and
- d. World Bank and International Panel of Expert (IPoE) clearly directed for making the unit ready in March and April 2018 to gain the maximum generation in high flow season of 2018.

## **1.1 Project's Scope of Work**

**1.1.1 Engineering Design Work:** The Consultants, responsible for implementation of existing Units 11 to 14 of T-3, proposed in 1992 in their Inception Report that 960 MW (2 x 480 MW) Unit 15 and 16 can be added to Tunnel 4. In 2010, a JV of M/s Mott MacDonald-United Kingdom, M/s Coyne-et-Bellier-France, M/s

Mott MacDonald-Pakistan and M/s Associated Consulting Engineers-Pakistan (also known as T4CJV) was appointed as design consultant and a scheme with an installed capacity of 1,410 MW having three generating units of 470 MW each with expected annual generation of 3,840 GWh was recommended.

**1.1.2 Civil Construction Works:** This included modification of Tunnel-3 and Tunnel-4 intakes, design, supply installation and testing of penstock and construction of power house.

**1.1.3 Electrical Works:** This included design, supply, installation, commissioning and testing of generators, transformers, control and protection systems, and power house auxiliary equipment.

**1.1.4 Mechanical Works:** This included design, supply, installation, commissioning and testing of turbines, governors, inlet valves, cranes, cooling and fire water equipment, tunnel and power station drainage equipment, dewatering equipment, workshop equipment etc.

## **1.2 Objectives of the project**

The prime objective of implementation of T4HPP was to expand capacity of low cost / renewable energy of 1,410 MW keeping in view the present and future energy requirements of Pakistan. Secondary objectives were providing employment opportunities and socio-economic uplift.

## **2. AUDIT OBJECTIVES**

The main objectives of performance audit were to evaluate:

- a. Whether the project was managed with due regard to economy, efficiency and effectiveness;
- b. Whether the project succeeded in achieving its objectives as envisaged in PC-I, and
- c. Analyse the findings of IC constituted by the Prime Minister of Pakistan on premature inauguration of the project in March, 2018.

## **3. AUDIT SCOPE AND METHODOLOGY**

The audit of T4HPP was initially planned in Audit Plan 2018-19. Initial period of performance audit was from approval of original PC-I dated August 16, 2012 to June 30, 2019. During this period, total expenditure of Rs.99,363 million

was charged to the project. The auditable record was available in the office of the Chief Engineer / Project Director, T4HPP. Audit activity started with the preparation of Preliminary Survey Report (PSR) and performance audit was conducted during March 06, 2019 to June 28, 2019.

The following audit methodology was adopted during the course of execution of performance audit:

- a. Discussions with the project management;
- b. Review of original PC-I of the project up to 1<sup>st</sup> revised PC-I (not approved until the close of audit);
- c. Review of implementation of contract agreements;
- d. Review of implementation of consultancy agreements;
- e. Review of progress reports of the project;
- f. Checking of payment record;
- g. Review of correspondence files;
- h. Site visits;
- i. Evaluation of the findings of the IC Report, and
- j. Examination of selected project record and other auditable documents.

The compilation of performance audit report was under process, meanwhile, CDWP vide its minutes of meeting dated November 18, 2019 directed to carry out a comprehensive performance audit of the project in the light of findings of IC constituted by Prime Minister of Pakistan. Accordingly, the under compilation performance audit report was halted to re-conduct the field execution afresh, in compliance to direction of the AGP office dated January 17, 2020. In the light of recommendations of the IC, the revised PSR was vetted by Director General Performance Audit Wing (PAW) on April 13, 2020. On the basis of revised PSR, field execution of performance audit was conducted during April 14, 2020 to June 25, 2020 under Audit Plan 2019-20. Due to prevailing COVID-19 pandemic condition, only limited record was produced by the management. The matter of non-production of record was also taken up with the project management, higher-ups of WAPDA as well as AGP office. However, the issues observed from the available record have been placed under “Audit

Findings and Recommendations”. Apart from this performance audit, the Audit had also been highlighting such issues in T4HPP in its earlier printed compliance audit reports. These issues have been included in this report in a summarized manner under a separate chapter of “Other Significant Issues” to give holistic view to the stakeholders.

## **4. AUDIT FINDINGS AND RECOMMENDATIONS**

### **4.1 Financial Management**

Financial Management is a vital activity towards successful implementation of any development project. Proper management of financial resources helps in achieving project goals in a timely manner.

Instances of weak internal controls resulting into improper financial management were observed during execution of T4HPP. Funds were withdrawn from IBRD loan without any immediate requirement in March, 2014 whereas first payment was made out of these funds in January, 2015. Resultantly, interest charges were to be paid on the withdrawn amount from the World Bank unnecessarily. This aspect of improper financial management and weak internal controls is highlighted in detail in Para-4.1.1.

Similarly, another aspect which manifests weak internal controls was observed in case of extra contractual favour to the contractor in the shape of financial assistance. Neither financial assistance covered under the contract nor any interest was applied and recovered from the contractor. This aspect of weakness of internal control is highlighted in detail in Para-4.1.2.

#### **4.1.1 Extra financial burden on account of interest charges on IBRD loan due to non-utilization of withdrawn amount – Rs.152.79 million**

As per clause-B(b)(iv) of Schedule-2 of subsidiary loan agreement between Economic Affairs Division (EAD), GoP and WAPDA, “pay interest on the principal amount of the loan withdrawn and outstanding from time to time at the rate of fifteen percent (15%)”.

During performance audit of T4HPP, it was observed that an amount of US\$ 10 million equivalent to Rs.1,018.58 million was withdrawn from World Bank on March 11, 2014. First payment of Rs.107.08 million was made out of these funds on January 29, 2015. Thus, the withdrawn amount could not be utilized during the year 2014, resultantly, interest charges @ 15% amounting to US\$ 1.50 million equivalent to Rs.152.79 million (@ Rs.101.8577 per US\$) were to be paid on the withdrawn amount. The Authority sustained a loss due to unnecessary withdrawal of funds from World Bank for which responsibility needed to be fixed but the same was not done.

Improper planning resulted in extra financial burden of Rs.152.79 million on account of interest charges due to non-utilization of withdrawn amount.

The matter was taken up with the management and it was replied that actual Interest During Construction (IDC) rate on IBRD is 3.36% on average, which is considerably below the figure of 15%.

The reply was not tenable because 15% interest was to be paid by WAPDA on withdrawn loan amount as per subsidiary loan agreement with EAD.

The DAC in its meeting held on September 18, 2020 directed the management to submit revised reply along with properly linked supporting documents to Audit for verification within 15 days. Further progress was not intimated till finalization of report.

Audit recommends the management to justify retention of withdrawn amount for about 11 months without demand leading to extra financial burden in the shape of interest charges.

#### **4.1.2 Non-recovery of financial charges on account of extra contractual favour extended to the contractor – Rs.79.59 million**

According to Tarbela 4<sup>th</sup> Extension Consultant's letter No.PM/T4CJV/SITE/16178 dated September 11, 2018, the agreement of financial assistance was finalized directly between WAPDA and Sino Hydro Group Limited without Engineer's involvement vide minutes of meeting dated November 22, 2016. Therefore, it is appropriate to recover the financial assistance amounting to US\$ 1.3 million given to M/s Sino Hydro Group Limited directly by the Employer itself. Furthermore, as per Finance Division, GoP Notification No.F.8(2)GS-I/2018-1775 dated December 02, 2019, the markup @ 11.53% was chargeable on development loans and advances by the Federal Government.

During performance audit of T4HPP, it was observed that an extra contractual favour in the shape of financial assistance of US\$ 1.30 million equivalent to Rs.136.17 million was provided to the Civil Contractor M/s PCCCL (formerly M/s Sino Hydro Group, Limited) vide minutes of meeting dated November 22, 2016. Audit held that the financial assistance to the Contractor was not covered under the Contract, therefore, interest of Rs.79.59 million on this extra contractual favour needed to be applied and recovered from

the Contractor on the pattern of interest charged by the Finance Division, GoP on development loans and advances given to the executing agencies besides recovery of original amount of financial assistance. Though, the amount of financial assistance had been recovered but the interest was not recovered as tabulated below:

**(Amount in Rs.)**

Principal Amount remained with the contractor	Principal Installments	Period		Days	Months	Interest Rate p.a	Interest Amount to be recovered
		From	To				
136,171,880	34,042,970	22/11/2016	04/10/2018	681	23	11.53%	29,700,335.27
102,128,910	34,042,970	22/11/2016	22/11/2018	730	24	11.53%	23,878,022.85
68,085,940	34,042,970	22/11/2016	10/01/2019	779	26	11.53%	16,987,196.16
34,042,970	34,042,970	22/11/2016	28/02/2019	828	28	11.53%	9,027,855.21
<b>TOTAL</b>	<b>136,171,880</b>						<b>79,593,409.50</b>

Extra contractual favour in the shape of financial assistance to the contractor resulted in non-recovery of financial charges / interest amounting to Rs.79.59 million.

The matter was taken up with the management and it was replied that tax was not deductible on mobilization advance and it was agreed that 50% of the advance (US\$ 1.3 million out of US\$ 2.6 million) of amount deducted as tax on mobilization advance will be given as financial assistance to the contractor. The financial assistance has been recovered from the Contractor.

The reply was not tenable because the financial assistance was not covered under the contract and deduction of Withholding Tax (WHT) on advance payments of the Contractor, if not applicable, was due to the negligence of the project management.

The DAC in its meeting held on September 18, 2020 directed Director Taxes and Chief Auditor, WAPDA to conduct a fact finding inquiry regarding the facts of the case and applicability of WHT deduction with or without exemption certificate of the contractor. Further progress was not intimated till finalization of report.

Audit recommends the management to recover the interest charges from the Contractor besides implementing the DAC's decision.

## **4.2 Procurement and Contract Management**

Planning plays a vital role in achievement of envisaged benefits of any project. Manual for Development Projects of Ministry of Planning, Development and Reform also emphasizes that without a scientific approach to the task of managing projects and achieving objectives, it will be very difficult for the organizations to successfully execute the projects within the scheduled time, scope, quality and deliver the required result. Once approved, the executing agency is required to implement the project in accordance with the PC-I provisions. It has no authority to change and modify any approved parameter of the project on its own. No expenditure may be undertaken beyond the approved scope and cost of the project, and if done, it would be considered as illegitimate expenditure.

Audit observed that the management could not properly plan the coordination between Civil and E&M works. This improper planning resulted in extra financial burden on the national exchequer in the shape of acceleration programme issued to the Civil and E&M contractors. Despite this, neither the stipulated original nor the accelerated completion dates could be achieved. This aspect of poor planning and contractual mismanagement affecting the economy of the project is highlighted in detail in Para-4.2.2.

The puncturing of dewatering valves during Defects Liability Period (DLP) period also affected the economy of the project and reflected contractual mismanagement. Upon puncturing of dewatering valves, the Draft Tube Gates (DTGs) were lowered to repair these valves, however, the gates got stuck in mud and E&M contractor refused to lift these gates despite issuance of instructions by the project consultant. This aspect of contractual mismanagement, economy and efficiency of the project is highlighted in detail in Para-4.2.1.

Another aspect of contractual mismanagement which is reflective of weak internal controls was observed in cases of non-renewal of performance securities and insurance policies upon their expiry. This aspect of poor internal control mechanisms and violation of contractual requirements is highlighted in detail in Para-4.2.3 & 4.2.8. Other control weaknesses were also observed which are highlighted in detail in Para-4.2.5, 4.2.6 & 4.2.7.

#### **4.2.1 Loss due to non-lifting of Draft Tube Gates (DTGs) – Rs.14,201.37 million**

As per sub-clause-22.6 of General Conditions of the E&M Contract, “If by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the facilities, the Contractor shall immediately carry out such work”.

During performance audit of T4HPP, it was observed that penstock dewatering valves of main inlet valve of Unit 16 and 17 got punctured during the DLP on July 08, 2018 and July 05, 2018 respectively, as pointed out by project consultant. DTGs were lowered to repair dewatering valves but could not be lifted up which were stuck in the mud. The project consultant issued instructions to the Contractor M/s Voith Hydro Consortium under sub-clause-22.6 of the Contract to lift the DTGs immediately to prevent damage to the installations. The Contractor refused to do so and the DTGs were lifted by a local private contractor at a payment of Rs.70 million. Audit held that the generation units remained non-operational due to non-lifting of DTGs by the Contractor which resulted in generation loss of Rs.13,986.33 million, incurrence of overhead expenditures of Rs.145.04 million and Rs.70 million on account of lifting of DTGs by private contractor. The detailed financial losses are given at **Annex-1**.

The IC vide Para-6.19 observed the incident of sticking of DTG in mud due to puncturing of dewatering valves which caused loss of 616 million units as highlighted by IC in Para-5.09(a)(i). IC also highlighted the incurrence of Rs.70 million by WAPDA on lifting of DTGs upon refusal of the contractor at Para-6.24. Further, the IC held Civil and EM contractors directly responsible for the loss and recommended to recover the same vide Para-7.21 & 7.23.

Non-adherence to contractual provisions resulted in total loss of Rs.14,201.37 million to the Authority.

The matter was taken up with the management and it was replied that WAPDA lodged a claim against E&M Contractor amounting to Rs.14,201.37 million after substantiation of the Consultants. The case has been referred to the Dispute Board.

The DAC in its meeting held on September 18, 2020 directed the management to share decision of Dispute Board along with properly linked supporting documents to Audit. Further progress was not intimated till finalization of report.

Audit recommends the management to fix responsibility and effect recovery of the losses from the responsible.

#### **4.2.2 Irregular payment to contractors on account of acceleration programme despite delays in achievement of milestones – Rs.5,419.16 million**

As per Rule-40 of PPRA Rules, save as otherwise provided there shall be no negotiations with the bidder having submitted the lowest evaluated bid or with any other bidder. Moreover, as per clause-1 of VO-2, the Civil Contractor was required to complete the civil work of Units 17, 16 and 15 by July 20, 2016, August 27, 2016 and September 28, 2016 respectively, in order to enable the E&M Contractor to complete all the above three units for commercial generation latest by June 30, 2017 to avail the benefit of generation revenue of high flow season of 2017.

During performance audit of T4HPP, it was noticed that the original contract for modification of Tunnel-3 & 4 Intakes, Design, Supply, Installation & Testing of Penstock and Construction of Power House was awarded to M/s Sinohydro Group Limited, China on September 09, 2013 at a cost of US\$ 262 million equivalent to Rs.26,231.27 million with the completion dates of December 31, 2017 (Unit 17), January 31, 2018 (Unit 16) and February 28, 2018 (Unit 15). Audit observed that the intention to accelerate the implementation schedule of the project was well known to WAPDA and the Contractor, even before award of contract, which is substantiated from the following facts:

- a. The Contractor agreed, vide letter of acceptance dated August 17, 2013, to achieve the durations included in their offer and the Contractor would update their implementation programme by enhancing completion dates.
- b. Before the award of contract, a meeting between WAPDA and M/s Sinohydro was held on September 04, 2013, wherein, WAPDA intended that implementation schedule should be advanced so that

generation from all three Units 15, 16 & 17 could be achieved one year earlier in 2017 during high flow season.

Despite above commitments, negotiations were held with the Civil Contractor and VO-2 amounting to US\$ 51 million equivalent to Rs.5,026.14 million (19.47% increase of original contract price) was issued on March 26, 2015 for acceleration of the Civil Works. Further, in order to maintain interface of Civil works with E&M works, negotiations were held with E&M Contractor (M/s Voith) and CO-10 amounting to US\$ 5.70 million equivalent to Rs.688.68 million was issued on July 31, 2017 to accelerate the E&M works (**Annex-2**). Moreover, No objection Letter (NOL) from World Bank for issuance of CO-10 was also not obtained. Upon non-achievement of completion dates by both the Civil and E&M Contractors in accordance with VO-2 and CO-10, the completion dates were further revised vide VO-2-R1. Even the revised dates of VO-2-R1 could not be achieved and the dates were further extended vide VO-2-R2. The details are given in the table below:

Particulars	Original Dates of Completion		VO-2 for Advancement of Completion Dates		Extension issued through VO 2-R1	Further Extension issued vide VO 2 -R2 & CO-10	Actual Completion Dates	Delay with reference to VO-2	Delay with reference to CO-10
	Civil Work	E&M Work	Civil Work	E&M Work	Civil + E&M	Civil + E&M	Civil + E&M	Civil + E&M	E&M Work
<b>Unit 17</b>	31 Dec 2017	27 Mar 2017	20 Jul 2016	30 Jun 2017	14 Aug 2017	25 Feb 2018	02 Mar 2018	245	335
<b>Unit 16</b>	31 Jan 2018	28 Apr 2017	27 Aug 2016	30 Jun 2017	20 Feb 2018	25 Apr 2018	30 Jun 2018	365	362
<b>Unit 15</b>	28 Feb 2018	31 May 2017	28 Jul 2016	30 Jun 2017	20 Mar 2018	30 May 2018	22 Oct 2018	479	364

Audit held that the amount of Rs.4,730.48 million paid to the Civil Contractor against VO-2 under acceleration programme and amount of Rs.688.68 million paid to E&M Contractor against CO-10 were irregular because both the contractors could not achieve the stipulated completion period despite thrice revisions of the completion dates. In addition, the issuance of VOs and CO to the Civil and E&M Contractor through negotiations was in violation of PPRA Rules.

The IC vide Para-7.16(iv) concluded that the financial basis of payment of US\$ 51 million for acceleration of project completion from March 2018 to June

2017 predicted on the potential to realize additional revenue in the 2017 high-flow season of approximately US\$ 300 million have been fully lost because no single unit of T4HPP could generate electricity during the high flow season of 2017. Moreover, not a single unit could be made ready for generation upto end of high flow season of 2018 let alone 2017.

Non-adherence to time frame given in the acceleration programme resulted in loss due to irregular payment of Rs.5,419.16 million up to May 2018 to Contractors without achievement of the required completion dates.

The matter was taken up with the management and it was replied that financial and economic benefits have been deferred by a year but not lost and the cause of deferment was force majeure.

The reply was not tenable as award of acceleration programme through negotiations was in violation of PPRA Rules and the timelines for acceleration programme could not be achieved despite incurrence of additional expenditure on account of issuance of VO-2 and CO-10.

The DAC meeting was held on September 18, 2020 in which PAO agreed with the stance of WAPDA. Audit contended that signing of VO-2 was against the PPRA Rules and payment of acceleration programme was irregular as new timelines were not achieved. Further progress was not intimated till finalization of report.

Audit recommends the management to fix responsibility on the person(s) at fault for:

- entering into an acceleration programme through VOs;
- issuance of CO-10 through negotiations in violation of PPRA Rules and without obtaining NOL from World Bank; and
- additional payments of acceleration programme despite non-observance of its timelines/milestones.

#### **4.2.3 Non-obtaining of renewed and additional performance securities from the E&M Contractor – Rs.3,178.31 million**

As per Clause-13.3.3 of General Conditions of the E&M Contract, if the Contractor, pursuant to General Condition sub-clause-27.10 is liable for an extended Defect Liability obligation, the Performance Security shall be extended

for the period specified in the PC. Clause-13.3.1 states that the amount of Performance Security shall be 10% of Contract Price. Moreover, Clause-11.2 states that the contract price shall be a firm lump sum not subject to any alternation, except in the event of a Change in the Facilities or as otherwise provided in the Contract.

During performance audit of T4HPP, it was noticed that two performance securities amounting to Rs.3,015.99 million provided by E&M Contractor for the original works of the contract were expired on July 05, 2018. The Units 17, 16 & 15 were handed over to WAPDA on January 30, 2018, March 30, 2018 and May 10, 2018 respectively. As per contract clause and recommendations of IPoEs and Central Contract Cell (CCC), WAPDA, the contractor was bound to keep the performance securities valid upto successful expiry of the DLP i.e. July 30, 2019, September 30, 2019 and November 10, 2019 respectively, but the same was not done. Moreover, COs amounting to Rs.1,623.20 million in excess of the original contract price were approved by the Authority without obtaining/ enhancing the performance securities by an amount of Rs.162.32 million i.e. 10% of additional/varied cost of works (**Annex-3**). Audit held that the cost of performance security was normally in-built in the item rates, therefore, non-obtaining of performance security for the additional/varied works was tantamount to undue favour given to the contractor. This showed inefficient project management which put the project at risk due to non-obtaining renewed and additional performance securities from the E&M Contractor.

Non-adherence to contract provisions resulted in non-renewal and non-obtaining of additional performance securities from the E&M Contractor amounting to Rs.3,178.31 million.

The matter was taken up with the management and it was replied that E&M Contractor initially agreed to extend the performance bank guarantee but later on declined to do so. Accordingly, the Engineer has stopped to certify its remaining payments of US\$ 23 million since January, 2019.

The DAC in its meeting held on September 18, 2020 decided that GM (CCC) should make a mechanism to ensure performance guarantees are extended as per given schedule and risk of employer is fully covered. The same may be forwarded to Ministry of Water Resources for examination and further

transmission to Audit within a month. Further progress was not intimated till finalization of report.

Audit recommends the management to fix responsibility for non-renewal of performance securities as per contract provisions besides justifying the reasons for non-obtaining of additional performance securities for the additional/varied works.

#### **4.2.4 Unjustified payment to contractor on account of execution of work based on current prices – Rs.1,999.87 million**

As per Clause-3.1.1 of General Conditions of Contract regarding Obligations of the Consultant, the Consultant shall perform the Services and carry out their obligations hereunder with all due diligence, efficiency and economy in accordance with generally accepted professional standards and practices, and shall observe sound management practices, and employ appropriate technology and safe and effective equipment, machinery, materials and methods.

During performance audit of T4HPP, it was observed that payment of Rs.1,999.87 million against IPC-48 (Rs.537.42 million+ Rs.1,462.45 million (US\$ 13.93 million @ Rs.105/US\$)) was made to the Civil Contractor on account of VOs. It was also noticed that items of VOs were based on current prices / rates without having any reference to the rate analysis or BoQ rates. Moreover, in most cases the items were not quantified as well by the Consultant. Audit held that in the absence of proper rate analysis and quantification of items by the Consultant, the payment of Rs.1,999.87 million on account of execution of work through VOs was not justified.

Non-due diligence by the Consultant resulted in unjustified payment of Rs.1,999.87 million to contractor on account of execution of work based on current prices.

The matter was taken up with the management and it was replied that there was no adverse effect in issuing VO as per need of the project.

The reply was not acceptable as payment of VOs was made on current prices / rates without rate comparison of VO with BoQ items and rate analysis of non-BoQ items.

The DAC in its meeting held on September 18, 2020 directed the management to submit revised reply with rate comparison of VO with BoQ items and rate analysis of non-BoQ items. Further progress was not intimated till finalization of report.

Audit recommends the management to justify the payment of VOs on current prices with proper rate analysis and quantification as per direction of the DAC.

#### **4.2.5 Irregular expenditure on account of remuneration ceilings by consultants – Rs.45.89 million**

Consultancy Services Agreement of T4HPP provides that remuneration and reimbursable expenses of the Consultant shall be paid as per ceilings specified in clause-6.1(b) of General Condition of the Contract. The said remuneration shall be fixed for the duration of the Contract unless otherwise specified in the Special Conditions of the Contract.

During performance audit of T4HPP, it was observed that remuneration ceiling of consultants M/s ACE & MMP was revised as per Amendment No.2 during July, 2018 due to increase in time and scope of original work of the project. However, the Consultants had utilized an amount of Rs.45.89 million in excess of approved remuneration ceilings provided under Amendment No.2 (**Annex-4**). The claim of the Consultants for the excess remuneration ceilings was irregular.

Non-adherence to the Amendment No.2 of consultancy services agreement resulted in irregular expenditure of Rs.45.89 million on account of remuneration ceilings by consultants.

The matter was taken up with the management and it was replied that the amount is withheld and not yet paid to the Consultants.

The DAC in its meeting held on September 18, 2020 directed the management to submit revised reply along with properly linked supporting documents to Audit for verification within 15 days. Further progress was not intimated till finalization of report.

Audit recommends the management to justify the incurrence of irregular expenditure on account of excess remuneration ceilings by the Consultants.

#### **4.2.6 Irregular payment on account of changes in legislation – Rs.28.85 million**

According to clause-13.7 regarding Adjustments for Changes in Legislation, "...such cost shall not be separately paid if the same shall have already been taken into account in the indexing of any inputs to the table of adjustment data in accordance with the provisions of sub-clause-13.8". Moreover, as per clause-13.8 regarding Adjustments for Changes in Cost, "the amount payable to the contractor shall be adjusted for rise or fall in the cost of labour, goods and other inputs to the work, by addition or deduction of the amounts determined by the formulae. To the extent that full compensation for any rise and fall in costs is not covered by the provision of this or other clauses, the Accepted Contract Amount shall be deemed to have included amounts to cover the contingency of other rise and falls in costs".

During performance audit of T4HPP, it was observed through IPCs from July 2014 to October 2015 that a payment of Rs.28.85 million was made to the Civil Contractor on account of "Change in Legislation" due to revision of minimum wage rate by Khyber Pakhtunkhwa Government from Rs.10,000/month to Rs.12,000/month. Audit held that impact of all types of increases in cost of labour had already been taken into account through formula of escalation under clause-13.8 of the Contract by using current prices of labour given by Federal Bureau of Statistics. Therefore, a separate payment of Rs.28.85 million on account of changes in legislation due to revision in minimum wage rate was irregular being already included under the formula of escalation.

Non-adherence to contract clause resulted in irregular payment of Rs.28.85 million on account of change in legislation.

The matter was taken up with the management and it was replied that there was an increase in minimum salary of labour by Khyber Pakhtunkhwa during the year 2014-15 to Rs.461 per day. However, GoP did not change the minimum salary and it remained at Rs.400 per day. Therefore, the Contractor was paid for difference of Rs.400 per day to Rs.461.54 per day under clause-13.7.

The reply was not tenable because separate payment was not admissible as per contract provisions.

The DAC in its meeting held on September 18, 2020 directed the management to submit revised reply along with properly linked supporting documents to Audit for verification within 15 days. Further progress was not intimated till finalization of report.

Audit recommends the management to recover the irregular payment from the Contractor.

#### **4.2.7 Unjustified additional expenditure due to waiver of type tests of steel towers – Rs.21.62 million**

According to Section-10.3.3.1 of Volume-II Electrical Protection and metering requirements of the Contract Agreement, executed with E&M Contractor, “Type test shall be carried out on each item of the equipment under this contract. However, duly certified and complete test reports for tests carried out by an independent, accredited authority on similar equipment may be acceptable in lieu of actual tests, subject to the satisfaction of the Project Manager”.

During performance audit of T4HPP, it was observed that originally power transmission from T4 Power House to Switchyard contained six (6) towers which were proposed to be changed to nine (9) towers solution of changed design by the Contractor. The Contractor was required to perform type tests on the proposed towers or provide type test certificates covering equipment of similar design, rating and construction. Contrary to the contractual requirements, neither the type tests conducted nor the type tests certificates were provided by the Contractor. In fact, the type tests of transmission line towers were waived-off by the Authority in lieu of additional factor of safety from 1.3 to 1.56 for which an amount of US\$ 204,000 equivalent to Rs.21.62 million was incurred. In response, the Contractor extended the DLP from 1 year to 3 years. The approval of the Authority for waiver of type tests was accorded with the condition to achieve the agreed COD of August 14, 2017 and not to suffer further delays. Audit held that despite waiving-off type tests and incurring additional expenditure, the completion of project within planned date of August 14, 2017 could not be achieved. Hence, the waiver of required tests and incurrence of additional expenditure Rs.21.62 million was unjustified.

Non-adherence to contractual provisions resulted in unjustified additional expenditure of Rs.21.62 million due to waiver of requisite type tests of steel towers.

The matter was taken up with the management and it was replied that type test amounting to US\$ 390,625 were waived-off and additional expenditure of US\$ 204,000 was incurred for increase in additional factor of safety from 1.3 to 1.56 for incorporation in design for enhanced reliability of towers.

The reply was not tenable as the tests could only have been waived-off if the contractor had provided the type tests certificates in accordance with contract clause-25.8.3.

The DAC in its meeting held on September 18, 2020 directed the management to submit revised reply along with properly linked supporting documents to Audit for verification within 15 days. Further progress was not intimated till finalization of report.

Audit recommends the management to fix responsibility for non-achievement of planned completion date of project besides non-conducting of type tests and incurrence of additional expenditure.

#### **4.2.8 Non-extension of insurance policies by E&M contractor – Rs.26,424.80 million**

As per clause-(b) of Appendix-3 of E&M Contract regarding insurance requirements, Contractor was required to obtain ‘Installation All Risk Insurance’ covering physical loss or damage to the facilities at site, occurring prior to completion of the facilities, with an extended maintenance coverage for the Contractor’s liability in respect of any loss or damage occurring during the DLP while the Contractor is on the site for the purpose of performing its obligation during the DLP.

During performance audit of T4HPP, it was observed that ‘Installation All Risk Insurance’ policy amounting to Rs.26,424.80 million was provided by the E&M Contractor on July 23, 2018 with the extended period up to February 28, 2019. The Contractor was required to provide ‘Installation All Risk Insurance’ till the expiry of the DLP (540 days) i.e. November 01, 2019 as per contract agreement but the same was not done.

Non-adherence to contractual requirements resulted in non-extension of 'Installation All Risk Insurance' worth Rs.26,424.80 million which put the project assets at risk.

The matter was taken up with the management and it was replied that Installation All Risk Insurance was extended up to February 28, 2019.

The reply was not tenable as the Contractor was required to provide 'Installation All Risk Insurance' till the expiry of the DLP.

The DAC in its meeting held on September 18, 2020 directed the management to submit revised reply along with properly linked supporting documents to Audit for verification within 15 days. Further progress was not intimated till finalization of report.

Audit recommends the management to fix responsibility for non-obtaining of extended insurance coverage and recover the cost of insurance for the uncovered period from the Contractor.

### **4.3 Construction and Works**

Accurate execution of works is one of the key elements of project implementation life cycle. The decisions taken by the project management during the execution stage have far reaching impacts on the economy of the project as well as successful completion of the project. Moreover, Manual for Development Projects of Ministry of Planning, Development and Reform also emphasizes that the implementing agency is charged with the responsibility of successful completion of project's components within the scheduled time, scope, quality and deliver the required result.

Improper execution of the project was observed on the matter of operating both the raised & lower intakes and installation of trash racks at lower intake. Contrary to the advice of IPoE and review mission of World Bank, the project authorities proceeded for installation of trash racks at lower intake of T4 without conducting detailed technical analysis and evaluation. Later on after a short period of 51 days, the lower intake was permanently plugged due to which expenditure incurred on installation of trash racks was gone waste. This aspect of improper execution of project affecting the economy of the project is highlighted in detail in Para-4.3.1.

Another aspect of improper execution of works was observed in case of partial removal of cofferdam. Partial removal of cofferdam ceased sediment transport from the tailrace area which eventually caused sticking of DTGs and the unit was inaugurated before removal of cofferdam. The consultant certified 92.5% payment of Downstream Coffe Dam against the requirement of 90% payment. Moreover, 90% payment was associated with the construction of downstream cofferdam activity and only 10% payment was associated with the removal of cofferdam activity, thereby, leaving no impetus for the Civil Contractor to remove the cofferdam. This aspect of weak internal controls, improper execution of works and poor monitoring & supervision is highlighted in detail in Para-4.3.2 and Para-4.4.3.

#### **4.3.1 Wasteful expenditure on installation of trash racks at lower level intakes – Rs.941.52 million**

According to Section-III(1) of WAPDA guidelines, 1982, “all losses whether of public money or of stores, shall be subjected to preliminary investigation”. Moreover, the IPoE during meeting dated January, 2014 proposed that simultaneous use of two intakes is fraught with danger and should be re-evaluated. Furthermore, as per Review Mission Report of World Bank (May 03, 2017 to May 26, 2017), the IPoE reaffirmed its recommendations made in January 2014 that the lower intake of T4 be permanently plugged under the present construction contract and all future flows be passed through the raised intake.

During performance audit of T4HPP, it was observed that a payment of US\$ 9.55 million equivalent to Rs.941.52 million was made to Contractor on account of installation of trash racks at lower level intakes. Contrary to IPoE recommendations dated January, 2014, the project authorities proceeded for provision and installation of trash racks at lower intake of T4 during 2016 without conducting detailed technical analysis and evaluation. Resultantly, a VO-20 valuing US\$ 10.12 million equivalent to Rs.997.24 million was issued in 2016 on the basis of WAPDA’s opinion that initially both the raised and lower intakes would be operated simultaneously and when the sediment delta reached the lower intake (10 to 15 years) a concrete plug would be constructed to cut off the lower intake. Later on, the lower intake of T4 was temporarily plugged on January 02, 2019 and after a short period of 51 days, the lower intake was permanently

plugged on February 22, 2019. Therefore, expenditure of Rs.941.52 million incurred on account of installation of trash racks at lower level intakes was gone waste.

Non-adherence to recommendation of IPoE resulted in wasteful expenditure of Rs.941.52 million on installation of trash racks at lower level intakes.

The matter was taken up with the management and it was replied that the Employer / Consultant took decisions keeping in view long term service of the generation facility of Tunnel-4 at the maximum potential.

The reply was not tenable as the project authorities proceeded for installation of trash racks at lower intake contrary to recommendations of IPoE.

The DAC in its meeting held on September 18, 2020 directed the management to provide revised reply along with properly linked supporting documents to Audit for verification. Further progress was not intimated till finalization of report.

Audit recommends the management to investigate the matter and fix responsibility for wasteful expenditure on trash racks.

#### **4.3.2 Irregular payment on account of non-removal of downstream cofferdam – Rs.5.88 million and US\$ 0.02 million**

As per item No.F-9.4 of payment schedule for lump sum pay item regarding Construction of downstream cofferdam, 10% payment was to be made after removal of downstream cofferdam.

During performance audit of T4HPP, it was observed that payment of Rs.235.06 million and US\$ 0.88 million (92.5% of BoQ provision) was made to the Civil Contractor on account of construction and removal of cofferdam against the BoQ provision of Rs.254.12 million and US\$ 0.95 million, respectively. Payment of Rs.5.88 million and US\$ 0.02 million (2.5% of BoQ provision) was made in excess before the removal of downstream cofferdam which was irregular as 10% payment was to be made after removal of downstream cofferdam. Non-removal of cofferdam resulted in accumulation of silt and sticking of DTGs in that silt.

As per Para-7.22 of Findings and Conclusions of the IC, “the Consultant is directly responsible for preparing the payment milestone under the VO-02 which enabled the Civil Contractor to get 90% payment associated with the downstream cofferdam activity restricting only to the construction of downstream activity”.

Non-adherence to contract clause resulted in irregular payment of Rs.5.88 million and US\$ 0.02 million on account of non-removal of downstream cofferdam.

The matter was taken up with the management and it was replied that remaining portion of cofferdam did not pose any threat to silt accumulation.

The reply was not tenable because excess payment was made than the permissible limit.

The DAC in its meeting held on September 18, 2020 directed the management to submit revised reply along with properly linked supporting documents to Audit for verification within 15 days. Further progress was not intimated till finalization of report.

Audit recommends the management to fix responsibility for excess payment to the contractor.

#### **4.4 Monitoring and Evaluation**

Monitoring helps in identification, analysis and removal of bottlenecks and expediting actions where projects have stalled or fallen behind schedule. Manual for Development Projects of Ministry of Planning, Development and Reform also emphasizes the importance of monitoring and evaluation activities, since these provide timely and useful information to the project management and the policy-makers.

Poor monitoring and evaluation of T4HPP is evident from the fact that both the original target completion dates as well as revised accelerated completion dates of the project could not be achieved. Even the basic rationale of accelerated programme to achieve energy revenue during high flow season of 2017 and to bring early availability of power in the national grid could not be met despite incurrence of huge additional expenditure under VO-2 and CO-10. This

aspect of weak oversight and monitoring of project is highlighted in detail in Para-4.4.1.

Another aspect of weak monitoring and oversight was observed from the fact that no action was taken against the contractor for not adhering to the target completion dates even under the accelerated programme. The revised completion dates were extended twice but the contractor did not complete the work within the extended dates, therefore, liquidated damages were required to be imposed. the contractor could not achieve the deadline for completion of milestone No.6 but the Engineer certified its payment contrary to the contractual provisions. These aspects of weak internal controls and poor monitoring are highlighted in detail in Para-4.4.2 and Para-4.4.3.

Similarly, instances of weak monitoring and supervision were observed in case of issuance of CO-15 in September, 2017 and CO-17 in June, 2018. These change orders had to be issued due to defective design/drawing for which extra cost had to be borne by the project management. This aspect of weak supervision and monitoring is highlighted in detail in Para-4.4.4.

The most glaring example of weak internal controls is the premature inauguration of the project which was done at the dead reservoir level and without completion of modification of tunnel-4 for intake. The same is highlighted in detail in Para-4.4.5.

#### **4.4.1 Generation loss due to non-achievement of commercial operations before high flow season of 2017 – Rs.36,470.40 million**

As per para-2 of Appendix-4 regarding Time Schedule of the Contract Agreement executed for Electrical and Mechanical works, Units 17, 16 & 15 were required to be completed up to March 27, 2017, April 28, 2017 and May 31, 2017, respectively. Moreover, according to VO-2 dated June 30, 2015, the advancement of Unit Completion Dates for acceleration of the project (Units 17, 16 & 15) was June 30, 2017.

During performance audit of T4HPP, it was noticed that VO-2 was issued to achieve the accelerated completion date of the project i.e. June 30, 2017. The main reason behind the early acceleration was to achieve energy revenue during high flow season of 2017 and to bring early availability of power in the national

grid. The targets of original scheduled dates as well as revised accelerated completion date of June 30, 2017 could not be achieved, as detailed below:

Sr. No.	Generating Unit No.	Targeted Completion Dates		Actual Completion Date	Delay Period
		As per Original Contract	As per acceleration programme		
1	17	March 27, 2017	June 30, 2017	March 02, 2018	08 months
2	16	April 28, 2017	June 30, 2017	June 30, 2018	12 months
3	15	May 31, 2017	June 30, 2017	October 22, 2018	16 months

Audit held that non-achievement of targeted completion dates as per acceleration programme despite incurrence of huge expenditure of Rs.5,419.16 million under VO-2 and CO-10 and non-utilization of high flow season of 2017 resulted in generation loss of Rs.36,470.40 million (US\$ 348 million @ Rs.104.80 per US\$) as worked out by the project consultant vide its letter dated August 15, 2014 for which responsibility needed to be fixed.

The IC concluded vide Para-7.16(iv) that no single unit of T4HPP could generate electricity during the high flow season of 2017, therefore, the potential to realize additional revenue approximately US\$ 300 million during high-flow season of 2017 have been fully lost.

Non-adherence to timelines of original contract agreement as well as accelerated programme resulted in generation loss of Rs.36,470.40 million due to non-achievement of commercial operations before high flow season of 2017.

The matter was taken up with the management and it was replied that the project was delayed due to force majeure events of 2015 and 2016 due to abnormal reservoir behavior.

The reply was not tenable as VO-2 was issued to generate additional revenue by utilizing high-flow season of 2017 which could not be achieved.

The DAC meeting was held on September 18, 2020 in which PAO agreed with the stance of WAPDA. Audit contended that despite payment of additional amount of acceleration programme to the contractor, the timelines for acceleration programme could not be met, therefore, the payment of acceleration programme was unjustified. Further progress was not intimated till finalization of report.

Audit recommends the management to fix responsibility for generation

loss due to non-achievement of commercial operations of generating units before high flow season of 2017.

#### **4.4.2 Undue favour to the contractor due to non-imposition of Liquidated Damages – Rs.3,125.74 million**

As per clause-8.7 of General Conditions of the Civil Contract Agreement, “If the Contractor fails to comply with sub-clause-8.2, (Time for completion), the Contractor shall subject to notice under sub-clause-2.5 (Employer claims) to pay delay damages to the Employer for this default. These delay damages shall be the sum stated in the Contract Data, which shall be paid for every day which shall elapse between the relevant time for Completion and the date stated in the Taking Over Certificate. However, the total amount due under this sub-clause shall not exceed the maximum amount of delay damages (if any) stated in the Contract Data.

During performance audit of T4HPP, it was noticed that a contract agreement for civil works was awarded to M/s Sinohydro Group Limited of China on September 09, 2013 at a cost of Rs.31,257.41 million. The contract was required to be completed within stipulated time but revised schedule was issued under acceleration programme based on additional payments. Even the revised completion dates were extended twice vide VO2-R1 and VO2-R2 but the contractor did not complete the works within extended dates. Audit held that LD charges @ 10% amounting to Rs.3,125.74 million (**Annex-5**) were required to be imposed upon the contractor but the same was not done so far. The details are as under:

<b>Sr. No.</b>	<b>Description of Work</b>	<b>Original Completion Dates as per commencement date i.e. October 04, 2013</b>	<b>Completion Dates under VO-2 R1</b>	<b>Completion Dates under VO-2 R2</b>	<b>Actual Completion Dates</b>
1	Modification of Tunnel for Intake-4	October 14, 2017	July 14, 2017	December 30, 2017	Still under construction as on March 31, 2019
2	Modification of Tunnel for Intake-3	February 26, 2019	February 26, 2019	February 26, 2019	
3	Completion of the Power House, Control Building etc.	April 02, 2018	May 13, 2018	July 23, 2018	March 09, 2019

Non-observance of contract clause resulted in undue favour of Rs.3,125.74 million to the Contractor due to non-imposition of LDs.

The matter was taken up with the management and it was replied that the reasons for not achieving June, 2017 timelines can be attributed to force majeure events and unforeseen geological conditions which could not be captured during design phase.

The reply was not tenable because completion dates could not be achieved despite twice revision and additional payments under acceleration programme.

The DAC in its meeting held on September 18, 2020 directed the management to submit revised reply along with properly linked supporting documents to Audit for verification. Further progress was not intimated till finalization of report.

Audit recommends the management to explain the reasons of non-inclusion of LDs clause in accelerated programme and issuance of revised timelines for granting undue favour to the contractor besides making recovery of LD charges from contractor.

#### **4.4.3 Loss due to irregular payment on account of partial removal of downstream cofferdam – Rs.86.78 million**

As per VO2-R2, dated July 25, 2017, the payment shall be released to contractor on successful and timely achievement of milestones. If achievement of any milestone as listed in Table-A of the above VO is delayed by a period of more than seven (07) days as compared to planned achievement dates due to reasons attributable to Civil Contractor, engineer shall ask the Civil Contractor to submit a recovery plan within three days and if recovery plan is not met then the Engineer will reject respective milestone payment.

During performance audit of T4HPP, it was observed that payment of US\$ 0.75 million equivalent to Rs.86.78 million was made to the Civil Contractor on account of milestone No.06 “Partial removal of D/S Cellular Cofferdam” (one trench at side excavated to balance water) for wet testing of Unit 17. The contractor applied for certification of the Engineer for achievement of this milestone and payments thereof on January 22, 2018. The Engineer was required to certify achievement of milestone within 5 working days under Section-6(c) of VO2-R2. However, the Engineer certified the achievement of this milestone on May 18, 2018 i.e. after elapse of four (04) months. Audit held that

the cofferdam was not removed by the Contractor within the planned date of completion of milestone of January 15, 2018. Therefore, the Engineer was required to reject the milestone payment of Rs.86.78 million.

Non-adherence to contract clause resulted in irregular payment of Rs.86.78 million due to non-achievement of planned date of completion of milestone.

The matter was taken up with the management and it was replied that certification of MPC-25 was delayed by the Engineer for want of more excavation of the cofferdam by the Contractor as the cofferdam had to be removed completely under the Contract.

The reply was not tenable because the contractor could not complete the milestone within the due dates.

The DAC in its meeting held on September 18, 2020 directed the management to provide revised reply along with properly linked supporting documents to Audit for verification. Further progress was not intimated till finalization of report.

Audit recommends the management to justify the milestone payment without achieving the targeted date besides recovery of the same from Contractor.

#### **4.4.4 Non-recovery of extra cost on account of issuance of change orders due to defective design approved by the consultant – Rs.70.04 million**

According to clause-2.3, 2.4 & 2.5 of Appendix-A of Consultancy Services Agreement regarding Description of the Service, the consultants will be responsible for construction supervision of all contracts and in this context will carry out construction design of civil works and preparation of detailed civil construction design. Moreover, as per clause-4.1 of General Conditions of Contract Volume-1 executed for Civil Work, “The Contractor shall design (to the extent specified in the Contract), execute, complete the works in accordance with the contract and with the Engineers’ instructions and shall remedy any defects in the works”.

During performance audit of T4HPP, it was observed that an amount of Rs.70.04 million was incurred through CO 15 & 17 pertaining to E&M works.

Audit held that these change orders had to be issued due to defective designs submitted by the Civil Contractor and approved by the Consultant as detailed below. Thus, an extra cost of Rs.70.04 million had to be borne by the Authority due to defective design of Civil Contractor approved by the Consultant for which responsibility needed to be fixed and cost incurred on CO 15 & 17 was required to be recovered from the Civil Contractor and the Consultant.

(Amount Rs. in million)

Description of Change Order	Amount	Design deficiency
<b>CO # 15 dated September 25, 2017 amounting to US\$ 570,900 @ Rs.105 per dollar</b> Isolated Phase Bus Bar Modification in Unit 17, 16 & 15	59.94	The opening of the Bus Bars design of Civil contractor did not match with the design of E&M contractor. The consultants approved the shop drawings without noticing the said discrepancies.
<b>CO # 17 dated June 02, 2018 amounting to CNY 594,097 @ Rs.17 per CNY</b> Modification in Draft Tube Inspection Platforms for all the units	10.10	Installation of Inspection Platform and dismantling of the beams was not possible as per approved design of civil contractor.
<b>Total</b>	<b>70.04</b>	

Non-adherence to clauses of Civil Contract and Consultancy Services Agreement resulted in non-recovery of extra cost of Rs.70.04 million on account of issuance of change orders due to defective design / drawings submitted by the Civil Contractor and approved by the Consultant.

The matter was taken up with the management and it was replied that a local inquiry was held on the matter which fixed responsibility on consultant and the contractor. However, the amount will be recovered on finalization of consultant's verification.

The DAC in its meeting held on September 18, 2020 directed the management to pursue the matter and updated status of recovery be intimated to Audit accordingly. Further progress was not intimated till finalization of report.

Audit recommends the management to effect recovery as per DAC's decision.

#### **4.4.5 Premature inauguration of the project at dead reservoir level without performing Reliability Test Run (RTR) and completion of intake of Tunnel-4**

As per Consultant's instructions dated February 27, 2018 regarding minimum reservoir operating level, dead level of the Tarbela Dam Reservoir was

fixed at 1,386 feet and according to Table-1 of Particular Condition of Contract Part A&B (Civil Works), Modification of Tunnel for Intake-4 was required to be completed in 1,446 days from Commencement date of October 29, 2013. Further, as per Section-8.3(a) of Standard Power Purchase Agreement (PPA) regarding commissioning of the Hydel Projects, upon issuance of Certificate of Readiness by the Engineer, the Company shall notify the Power Purchaser and carry out the commissioning tests. Moreover, Section-2.6(c) required hiring of ‘Independent Engineer’ with recommendation of Power Purchaser to submit a certificate indicating readiness of the complex for commissioning.

During performance audit of T4HPP, it was noticed that inauguration of the project was made on March 10, 2018 at dead reservoir level of 1,386 feet and without completion of major activity of ‘Modification of Tunnel for Intake-4’. The original required date of completion of the project was September 14, 2017 which was extended four times up to June 30, 2021 as detailed below.

<b>Particulars</b>	<b>Stipulated date of Completion</b>	<b>Extension in Time (Days)</b>	<b>Reference</b>
Original required date of completion	14.09.2017	1446 (From the date of Commencement i.e. 29.10.2013)	As per Table-1 of Particular Conditions of Contract Part-A&B (Civil Works)
1 <sup>st</sup> Extension	14.10.2017	30	VO-2 R1
2 <sup>nd</sup> Extension	15.06.2018	244	VO-2 R2
3 <sup>rd</sup> Extension	21.06.2020	737	VO-40
4 <sup>th</sup> Extension	30.06.2021	374	VO-43

Audit observed that inauguration of the project was made without performing the required tests to declare the COD of the complex on March 02, 2018 for Unit 17. The RTR was completed on September 28, 2018 after six months of inauguration. Moreover, COD was declared without hiring of Independent Engineer as required under Standard PPA.

The IC observed vide Para-6.24 of Examination of TSC’s Conclusions that the date of inauguration was made without consultation of Member (Power), Advisor Projects WAPDA, Chief Engineer (O&M), the Project Director, and also not at the Authority level of WAPDA, rather, it was done at the level of Chairman, WAPDA. Para-5.09(a) of Technical Sub-Committee on TOR(a), on the day of inauguration, the turbine was synchronized only for 3 minutes and remained shut till June 07, 2018. The unit was supposed to be in operation for RTR and

generating electricity after COD but because of the water at dead level, sustained operation could not take place. Hence, the hurry to declare COD on March 02, 2018 gives clear understanding that WAPDA was targeting March 10 inauguration by all means as the plant remained out of operation after synchronizing for just 3 minutes from 10<sup>th</sup> March to 7<sup>th</sup> June, 2018. Further, Para-6.07g(iv) of IC noted that COD before RTR was exceptional in case of T4, whereas, in all other contemporary hydropower projects COD is declared after RTR.

Non-adherence to the contract clause and consultant's instructions resulted in premature inauguration of the project at dead reservoir level without performing RTR and completion of intake of Tunnel-4.

The matter was taken up with the management in July 2020. The management replied that inauguration of the project does not mean completion of the project. It was further replied that procedure was adopted to achieve COD of Unit 17 after fulfilling contractual testing requirements as per provision of E&M Contract.

The reply was not tenable because the IC concluded that the commissioning and inauguration of the plant was premature given the fact that available water was not of the quality to operate the Unit 17 as the reservoir was at dead level.

The DAC in its meeting held on September 18, 2020 directed the management to submit revised reply along with properly linked supporting documents to Audit for verification within 15 days. Further progress was not intimated till finalization of report.

Audit recommends the management to fix responsibility for premature inauguration of project at dead reservoir level, without performing the required test for commercial operation of Unit 17 and completion of intake of Tunnel-4 besides implementing the DAC's decision.

#### **4.5 Other Significant Issues**

It is binding upon every auditee formation to make available all information / record to Audit as and when required by them in compliance to directive of the Public Accounts Committee (PAC) dated June 30, 2004, otherwise, disciplinary action will be initiated against persons responsible for the

delay in production of record. Despite repetitive requests, the management could not produce the requisite record to Audit for examination within the prescribed time. This aspect of non-compliance of directive of PAC is highlighted in detail in Para-4.5.1. Moreover, the Audit had also been highlighting some other issues in its earlier printed compliance audit reports, the detail of which is narrated in para-4.5.2.

#### **4.5.1 Non-Production of Record**

The PAC issued the directive on June 30, 2004 to auditee formation to make available all information / record to audit as and when required by them, otherwise, disciplinary action will be initiated against persons responsible for the delay under Section-14C (2&3) of the Auditor General's Ordinance, 2001.

During performance audit of T4HPP, record in the light of findings of the IC constituted by the Prime Minister of Pakistan regarding the premature inauguration of the project was requisitioned (**Annex-6**) but the requisite record was not produced except some correspondence files to Audit for scrutiny despite repeated reminders.

Non-observance of directive of the PAC resulted in non-production of record leading to hindrance in completion of the performance audit of the project.

The matter was taken up with the management and it was replied that Project office has been extending full cooperation to the audit team. The Honorable Prime Minister has returned the IC's Report agreeing with the conclusion of the Federal Minister for Water Resources without directing to take any further action. The record/data requisitioned by audit pertains to the Inquiry Report which is not sync with the position explained.

The reply was not tenable as the requisite record was not produced to Audit despite repetitive requests.

The DAC in its meeting held on September 18, 2020 directed the management to submit detailed justification along with record to Audit. Further progress was not intimated till finalization of report.

Audit recommends the management to implement the DAC's decision besides taking disciplinary action against the persons responsible for non-production of record.

#### 4.5.2 Issues highlighted in previous years printed reports

Apart from this performance audit report, the audit had also been highlighting some other issues in its earlier printed compliance audit reports as detailed below:

Para No. Year of Report	Subject	DAC's decision	Latest Status
Para-3.4.21 PDP-337 AR 2017-18	Loss due to non-provision of transformer bushing (EURO 6.63 million) – Rs.855.27 million	The DAC in its meeting held on March 19, 2018 directed the management to finalize the inquiry proceedings for fixing responsibility upon the persons at fault within 15 days.	The Inquiry Report duly vetted by PAO is still awaited.
Para-3.4.26 PDP-1597 AR 2017-18	Loss due to change in design and specialized contractor - Rs.630 million	The DAC in its meeting held on February 19, 2018 and March 19, 2018 directed the management to conduct a fact finding inquiry by Member (Water) within 15 days.	Re-audit remarks issued on May 03, 2019. Reply is still awaited.
Para-3.4.48 PDP-301 AR 2017-18	Loss due to unjustified payment to contractor – Rs.150 million (US\$ 1.50 million)	The DAC in its meeting held on February 19, 2018 and March 19, 2018 directed the management to follow up the inquiry proceedings.	Inquiry Report duly vetted by PAO is still awaited
Para-2.4.3 PDP-41 AR 2018-19	Unjustified payment to the Contractor on account of excess execution of BOQ – Rs.3,886.37 million	The DAC in its meeting held on December 11, 2018 directed the management to provide assurance on adequacy of geotechnical investigation of the project at the time of designing.	Re-audit remarks issued on April 13, 2021. Reply is still awaited.
Para-2.4.19 PDP-43 AR 2018-19	Loss due to leakages of substandard Penstock Dewatering Valves -Rs.425.60 million	The DAC in its meeting held on December 11-12, 2018 was not satisfied with the management's reply and directed the management to submit revised reply supported with relevant record to Audit within a month.	Re-audit remarks issued on March 03, 2021. Reply is still awaited.
Para-2.4.26 PDP- 34 AR 2018-19	Irregular additional payment to the Contractor due to non-achievement of milestone – Rs.105 million	The DAC in its meeting held on December 11-12, 2018 directed the management to submit revised reply to Audit within one week.	Re-audit remarks issued on March 03, 2021. Reply is still awaited.
Para-2.4.29 PDP-8 AR 2018-19	Loss due to negligence of the Contractor and the	The DAC in its meeting held on December 11-12, 2018 directed the management to make recovery	Compliance to DAC's decision is

Para No. Year of Report	Subject	DAC's decision	Latest Status
	Consultants – Rs.59.37 million	primarily from the Consultant and then Contractor proportionately. DAC also directed to initiate criminal proceeding against the Consultant who approved shop drawings without noticing discrepancy by the civil Contractor.	awaited.
Para-2.4.43 PDP-10 AR 2018-19	Unjustified and extravagant expenditure on inauguration ceremony – Rs.7.60 million	DAC in its meeting held on February 27-28, 2020 also directed the management to refer the case to Cabinet Division through MoWR for further advice.	Re-audit remarks issued on August 30, 2019. Reply is still awaited.

#### 4.6 Overall Assessment

Overall assessment of T4HPP with reference to three “Es” i.e. Economy, Efficiency and Effectiveness is as follows:

##### Economy

Economy means spending only that much which is barely essential to achieve the project goals. The executing agency is required to implement the project in accordance with the PC-I provisions, however, T4HPP exceeded over the original approved cost of the project by 47.10% i.e. from Rs.83,600 million in the original PC-I to Rs.122,977 million in the revised PC-I. Improper planning resulted in extra financial burden on the national exchequer in the shape of acceleration programme issued to the Civil and E&M contractors vide VO-2 and CO-10. Despite issuance of acceleration programme and incurrence of additional expenditure, neither the stipulated original nor the accelerated completion dates could be achieved besides losing the main objective of acceleration programme to harness maximum energy during the peak discharge season by June 30, 2017. The puncturing of DTGs and additional expenditure on their lifting, non-obtaining of extended performance securities on the varied works, wasteful expenditure on trash racks at lower intake, non-application and recovery of financial charges on the financial assistance provided to the contractor and incurrence of extra cost due to acceptance of defective designs submitted by the civil contractor are some of the examples of non-adherence to the principles of economy during execution of the project.

## **Efficiency**

Efficiency implies maximizing output from the given resources or minimizing input for the given outputs. According to Minimum Water Scenario of IRSA for the year 2018, WAPDA estimated that T4HPP would generate 387 MW to 944 MW during May to September period with average value of 673 MW, which means energy of 826 million units. Actual units generated in this period were 210 million units; the difference being 616 million units was a loss to the national exchequer. The financial basis of payment for acceleration of project completion from March, 2018 to June, 2017 predicted on the potential to realize additional revenue in 2017 high-flow season of approximately US\$ 300 million have been fully lost because no single unit of T4HPP could generate electricity during the high flow season of 2017. In addition, not a single unit could be made ready for generation upto end of high flow season of 2018, let alone 2017. Another instance of inefficiency of project management could be gauged from non-imposition of liquidated damages charges on the contractor for non-achievement of original as well as revised target completion dates despite additional payment under acceleration programme. Moreover, 90% payment was associated with the construction of downstream cofferdam activity and only 10% payment was associated with the removal of cofferdam activity, thereby, leaving no impetus for the civil contractor to remove the cofferdam which is also an example of inefficient project management.

## **Effectiveness**

Effectiveness refers to the extent the objectives have been achieved. The annual energy generation from T4HPP was estimated at the design stage as 3,840 million units annually. Therefore, the effectiveness, if measured with reference to this output only, reveals that no energy was produced in the high flow season of 2017 and not a single unit could be made ready for generation upto the end of high flow season of 2018. As such, associated revenue loss becomes Rs.30 billion at the rate of generating cost of Rs.7.814 per unit of electricity, despite spending USD 48 million extra to get the revenue equivalent to Rs.30 billion.

## **5. CONCLUSION**

Audit concluded that the inauguration of the project was pre-mature due to non-completion of intake of tunnel-4 and non-removal of downstream cofferdam. The inauguration was made at dead reservoir level without requisite quantity and quality of water and COD was fixed without carrying out the requisite RTR.

The Civil and E&M contractors were extended undue favour in the shape of issuance of acceleration programme through negotiation and waiving off requisite type test for steel towers. Moreover, no liquidated damages were imposed on the contractors for delays in completion of the project. Performance guarantees and insurance policies were also not extended by the contractors. On the other hand, extra-contractual financial assistance was also provided to the Civil Contractor without recovery of any financial charges. Various irregular payments were made during the execution of the project.

WAPDA Authority sustained losses due to approval of defective drawings by the consultant, non-lifting of DTGs by the E&M contractor, inefficient utilization of foreign loans and wasteful expenditure on installation of trash racks which showed poor contract management and financial mismanagement.

The project work was delayed considerably despite issuance of acceleration programme vide VO-2 and CO-10. Resultantly, envisaged benefits of energy generation during peak flow season of 2017 and 2018 could not be achieved.

## **ACKNOWLEDGEMENT**

We wish to express our appreciation to the management and staff of T4HPP for the assistance and cooperation extended to the auditors during this assignment. However, this appreciation could have been more profound if all the requisite record were made available to Audit to accomplish the assignment within prescribed timelines.

# **ANNEXURES**



## Project Digest

<b>Name of Project</b>	Tarbela 4 <sup>th</sup> Extension Hydropower Project
<b>Location</b>	110 KM from Islamabad and falls under jurisdiction of Swabi and Haripur Districts of the Khyber Pakhtunkhwa Province
<b>Responsible Authorities</b>	<b>Controlling Ministry:</b> Ministry of Water and Power, Govt. of Pakistan <b>Department:</b> Water and Power Development Authority (WAPDA)
<b>Type of Project</b>	Development Project for Power Generation
<b>Objective of the project</b>	The main objective of the Project was to enhance low cost/Renewable energy generation capacity of 1,410 MW
<b>Beneficiaries</b>	People of the Islamic Republic of Pakistan
<b>Time Phasing</b>	Construction of the project was started in October, 2013 and as per original schedule of the contract completion date of last unit was 31.05.2017. Actual completion date of the last unit is 22.10.2018

### Capital Cost

(Amount Rs.in Billion)

Cost	Date	Local	FEC	Total	Exchange Rate
Original PC-I	16.08.2012	17.735	65.866	83.601	1US\$= Rs.90
1 <sup>st</sup> Revised PC-I	Submitted for approval	62.277	60.700	122.977	1US\$= Rs.158.83
<b>Source of Finance</b>	Government of Pakistan and through foreign loans WAPDA own resources International Development Association (IDA) International Bank for Reconstruction and Development (IBRD)				
<b>Type of Finance</b>	Loan arranged by the World Bank WAPDA equity				Rs.76,437 Million Rs.38,507 Million

### Project stage

The whole project was awarded to three Contractors i.e. M/s Sinohydro China, M/s Voith and M/s ETERN-CCCE- HEI for Civil Work, E&M Work and Up-gradation of 500 KV Switchyard, respectively. Details, showing status of the project as on 31.03.2019 are as under:

Cost (Rs. in million)	Expenditure up to March 2019 Rs.in Million	Financial Progress	Commencement	Duration in Years	Dates of Completion of Power Generating Units		Physical Progress
					Original	Revised	
83,601	93,137.684	111%	04.10.2013	4	May 2017	June 2017	All the 3 units have been commissioned on 22.10.2018. However, Construction of new Intake 3 and 4 under Civil Contract are still under progress.*

- Due to non-completion of raised Intake of Tunnel 4, the units of T-4 have been commissioned/are being operated through lower/existing Intakes.

## Annex-1

### Employer's Financial Losses due to non-lifting of Draft Tube Gates (DTGs) of Units 17, 16 & 15

Amount Rs. & US \$ in million

Sr. No.	Description	Quantity (Million KWhr)	Unit Rate (PKR)	Total Revenue Loss in Pak Rs.	Equivalent US\$
1	Generation Revenue Loss due to non-operation of Units 17, 16 & 15	1,398.9	Approx. PKR. 10/KWhr	13,986.330	107.590
	Pay and Allowances of Employer's Manpower (T4HP & T4 O&M Staff)	-	-	2.360	0.018
	Cost incurred on Lifting of Draft Tube Gates of Units by the Employer	-	-	70.000	0.540
	<b>Sub-Total (A)</b>	-	-	<b>14,058.690</b>	<b>108.148</b>
2	Employer's Overhead Charges @ 1% of Sub-Total (A)	-	-	140.580	1.081
	<b>Sub-Total (B)</b>	-	-	<b>14,199.270</b>	<b>109.229</b>
3	Mobilization and Idleness Charges of Mobile Cranes	-	-	2.100	0.016
	<b>Grand Total</b>	-	-	<b>14,201.370</b>	<b>109.245</b>

Exchange Rate of 1 USD = 130 PKR (Source: Tarbela 4<sup>th</sup> JV Consultants letter No.PM/T4CJV/Site/16611 dated 1<sup>st</sup> Nov, 2018)

## Annex-2

### Amount of Original Contract, VO-2 & CO-10

(Amount in million)

Description	FC Component		Local Component	Total Contract Price in Rs.	Total Contract Price in US\$
	US\$	Equivalent to Rs.	Rs.		
1	2	3	4	5 = (3+4)	6
Original Contract Price	104.62	10,474.82	15,756.44	26,231.27	262
Additional for acceleration (VO-2)	20.400	2,010.45	3,015.68	5,026.14	51
Change Order-10	5.70	688.68	-	688.68	5.70
<b>Total</b>	<b>130.72</b>	<b>13,173.95</b>	<b>18,772.12</b>	<b>31,946.09</b>	<b>318.70</b>

### Completion Dates under VO-2, VO-2 R1, VO-2 R2 & CO-10

Particulars	Original Dates of Completion		VO-2 for Advancement of Completion Dates		Extension issued through VO 2-R1	Further Extension issued vide VO 2 -R2 & CO-10	Actual Completion Dates	Delay with reference to VO-2	Delay with reference to CO-10
	Civil Work	E&M Work	Civil Work	E&M Work	Civil + E&M	Civil + E&M	Civil + E&M	Civil + E&M	E&M Work
<b>Unit 17</b>	31 December 2017	27 March 2017	20 July 2016	30 June 2017	14 August 2017	25 February 2018	02 March 2018	245	335
<b>Unit 16</b>	31 January 2018	28 April 2017	27 August 2016	30 June 2017	20 February 2018	25 April 2018	30 June 2018	365	362
<b>Unit 15</b>	28 February 2018	31 May 2017	28 July 2016	30 June 2017	20 March 2018	30 May 2018	22 October 2018	479	364

### Annex-3

#### Amount of Performance Securities Expired under E&M Contract

Sr. No.	Detail	CNY	Rs.	Euro	Eq. Amount in Rs.
A	B	C	D	E	F = C + D + E
1	Performance Security No.288021400021 Expired on 05.07.2018 (1 Euro = Rs.75)	--	--	6,354,833	476,612,475
2	Performance Security No.288021400022 Expired on 05.07.2018 (1 CNY = Rs.23)	110,407,606	--	--	2,539,374,938
<b>Sub-Total-A</b>		<b>110,407,606</b>	<b>--</b>	<b>6,354,833</b>	<b>3,015,987,413</b>

#### Amount of Performance Security required against Change Orders

Detail	CNY	Rs.	Euro	Eq. Amount in Rs.
A	B	C	D	E = B+ C + D
Total Amount of Change Orders	50,727,199	20,167,731	5,817,475	1,623,203,933
Amount of Performance Security required @ 10% (in foreign currency)	5,072,720	2,016,773	581,748	162,320,393
Exchange Rate	23	1	75	--
Amount of Performance Security required @ 10% (in foreign currency)	116,672,558	2,016,773	43,631,063	162,320,393
<b>Sub-Total-B</b>				<b>162,320,393</b>
<b>Grand Total (A+B)</b>				<b>3,178,307,806</b>

## Annex-4

### Remuneration Ceiling paid in excess of the Approved Ceilings

Sr. No.	Statement Name	Amount (Rs.)
A	Remuneration claimed by ACE (Local)	12,292,412
B	Remuneration claimed by ACE (Foreign) Euro 116,504 @ Rs.150.23 per Euro	17,502,396
C	Remuneration claimed by MMP Consultant	16,093,365
<b>Total</b>		<b>45,888,173</b>

#### Statement-A – Remuneration claimed by ACE (Local)

(Amount in Rs.)

Sr. #	Name of Employees	Designation	Revised Contractual Ceiling after amendment.2	Up to date utilization	Excess Utilization of man-months of consultant
1	Syed SaqibHussain/Intisab Ahmed	CE Structure	13,767,441	14,030,185	262,744
2	Hafiz M SaifUllah	ARE No. Geology	13,563,914	15,062,292	1,498,378
3	TBN/HamadAfzal	InspectorElec Power	0	4,020,458	4,020,458
4	Din M/Sheikh Altaf/M Ayub/Sabz Ali Khan	RE Mechanical	14,922,120	15,791,225	869,105
5	M Tayyab/Syed Saqib Ali	JEMech	4672336	5,237,934	565,598
6	Rao M FarhanKhaliq/Haji M Ali	JE No.01 Gate	3,476,778	3,754,180	277,402
7	M Ahmad/Shahbaz Hassan	JE No.02 Gate	3,840,285	4,200,061	359,776
8	Kashif Rasool	Inspector Mechanical	2,490,765	2,918,472	427,707
9	M Asif Kamal Din	Health & Safety Inspector	2,453,387	2,880,063	426,676
10	M Yasin/Amin Yousaf	Auto Cad Draftsman 2	5,495,249	5,595,891	100,642
11	M Jamsheed	RE Switchyard	8,963,741	10,591,620	1,627,879
12	Sheraz Khan	SE Switchyard	5,843,231	7,045,599	1,202,368
13	UmairUIHaq	JE Switchyard	3,604,782	4,258,461	653,679
<b>TOTAL – A</b>					<b>12,292,412</b>

#### Statement B – Remuneration claimed by ACE (Foreign)

(Amount in Euro)

Sr. #	Name of Employees	Designation	Revised Contractual Ceiling after amendment-2	Up to date utilization	Excess utilization of man-months by consultant
1	Grant Wills (Mott MacDonald Ltd)	Project Integration / Coordination Engineer	0	109,613	109,613
2	M Monkchi/Marc Dayraut (Coyne & Bellier)	Design Support Coordinator Power Houses Civil	637,356	640,126	2,770
3	Jean Christophe (Coyne & Bellier)	Hydraulic Engineer	0	4,121	4,121
<b>TOTAL – B</b>					<b>116,504</b>

## Statement-C – Remuneration claimed by MMP Consultant

(Amount in Rs.)

Sr. #	Name of Employees	Designation	Revised Contractual Ceiling after amendment.2	Up to date utilization	Excess utilization of man-months by consultant
1	Zafar/FerozUd Din/M Iqbal / Ulfat Hussain	Principal Engineer C&I	11,304,028	14,001,616	2,697,588
2	Abdul Haseeb Khan / Muhammad Kashif Atiq	JE Intake	7,695,937	7,982,386	286,449
3	Hafiz Rehan Waqas / Ammarr Jadoon	JE C&I	3,062,286	3,877,384	815,098
4	Ubaid Anwar	JE Hydro-mechanical	4637025	4701310	64,285
5	Irfan Rafi	JE Electrical	4,465,905	4,530,190	64,285
6	Muhammad Rajab / Anzar Hussain / Naeem Afzal Khattaq	RE Power House Penstock	18,365,309	18,997,644	632,335
7	Nazi Iashari / Amjad Islam / Yasir Khan / ziaUllah	ARE-1 Power House Penstock	13,143,357	13,386,277	242,920
8	Luqman / Ibrar Ullah / Dawar Aizaz	JE Power House Penstock	7,303,741	8,267,554	963,813
9	Zia Ullah / Anees Iqbal / M Ali Sadqani	JE No.03 Power House Penstock	7,500,255	8,339,384	839,129
10	Muhammad Ali Sadqani / Naveed Iqbal / Asif Shahzad / Shakeel Ahmed	JE No.03 Power House Penstock	7,107,560	7,404,674	297,114
11	Naveed Azam	Inspector No.01, Power House Penstock	6,385,007	6,679,947	294,940
12	Muhammad Asif / Sahib Shah Jadoon	Inspector No.02, Power House Penstock	5,546,785	6,077,783	530,998
13	Javeed Iqbal Raza / Syed Hyder Ali Hashmi / M Awais	Inspector No.03, Power House Penstock	5,226,778	5,767,377	540,599
14	Arshad Zareen	Inspector No.04, Power House Penstock	3,976,617	4,280,945	304,328
15	Rashad Hameed Khan / M Inkisar Butt / Rana M Rashid	Welding Specialist	13,412,315	16,380,988	2,968,673
16	M Zubair Ashraf / Kashif Afzal	JE No.01 Welding Penstock Turbine	4,782,941	5,352,411	569,470
17	Nadeem Gull / Shiek Sarfraz Iqbal / Nadeem Iqbal / Waseem Iqbal / Kamran / Kamran Showkat	Inspector No.02, Welding Penstock time	2,354,184	3,274,737	920,553
18	Abdul Qadoos	Junior Surveyor No.01	8,391,290	8,761,171	369,881
19	Syed Faisal Raza	Junior Surveyor No.03	8,406,158	8,690,532	284,374
20	M Asif / Hamzullah khan	Junior Surveyor No.04	7,680,164	8,054,738	374,574
21	M Alataf / Syed Shabir Ahmed Shah	Auto Cad Draft Man No.06	7,239,438	7,551,795	312,357
22	Muhammad Nadeem / Shafiq Ur Rahman	ARE Electrical Switchyard	5,490,536	6,059,150	568,614
23	M Noman Arshad	JE Switchyard	3,808,999	4,457,096	648,097
24	Ishaq Shah	Inspector Switch Yard	2,731,813	3,234,704	502,891
<b>TOTAL – C</b>					<b>16,093,365</b>

## Annex-5

### Cost of Civil Work Contract awarded to M/s Sinohydro

(Amount in million)

Description	FC Component		Local Component	Total Contract Price in Rs.	Total Contract Price in US\$
	US\$	Equivalent to Rs.	Rs.		
1	2	3	4	5 = (3+4)	6
Original Contract Price	104.62	10,474.82	15,756.44	26,231.27	262
Additional for acceleration (VO-2)	20.400	2,010.45	3,015.68	5,026.14	51
<b>Total</b>	<b>125.02</b>	<b>12,485.27</b>	<b>18,772.12</b>	<b>31,257.41</b>	<b>313</b>

\*Exchange rate is Rs.100.12/US\$

### Detail of Liquidated Damages as on March 31, 2019

Sr. No.	Description of work	Planned Completion Dates under VO2-R2	Actual Completion Dates	Delay in Days	LDs per Day US\$ million	Total LDs in US\$ million	Equivalent to Rs. in million @ Rs.130/US\$
1	2	3	4	5	6	7 = 5*6	8
1	Modification of Tunnel for Intake 4	30.12.2017	Not yet Completed upto 31 <sup>st</sup> March, 2019	456	0.40	182.40	23,712
2	Modification of Tunnel for Intake 3	26.02.2019	-do-	33	0.50	16.50	2,145
3	Completion of Power House, Control Building and 500KV Switchyard	23.07.2018	09.03.2019	229	0.40	91.60	11,908
<b>Total</b>						<b>290.50</b>	<b>37,765</b>

\*Exchange rate is Rs.130/US\$

Liquidated Damages as per original schedule were Rs.37,765 million. However, according to Part-A of the Contract agreement, maximum amount of delay damages shall be 10% of the final Contract price i.e. **Rs.3,125.74 million**.

**Record requested vide Letter No. IP/T4HPP/Performance Audit/03 Dated June 08, 2020**

- a. Power Purchase Agreement of WAPDA with CPPA-G
- b. NEPRA's determination of tariff of T4HPP
- c. Dispatch Request by NPCC to the T4HPP from inauguration
- d. Data of Auxiliary consumption of T4HPP
- e. Documents regarding making the plant available to NPCC for generation on inauguration
- f. Spillway discharged data for 2017 and 2018
- g. Copy of the Report submitted by WAPDA to the IC on September 07, 2018 along with presentation.
- h. Complete data of reservoir Levels, Inflows, Forecast flows since January 2017 to December 2018
- i. IRSA Indents for 2017, 2018 and 2019
- j. Correspondence of WAPDA with IRSA to maintain the water level at 1,400 at the time of inauguration.
- k. Detail of all negative change orders
- l. Approvals of Pre-commissioning and Commissioning decisions
- m. Results of Pre-commissioning and Commissioning test
- n. Certificate of readiness of the Plant issued to the Power Purchaser
- o. Certificate of Synchronization
- p. Capacity Test Certificate
- q. Commissioning Test Certificates of all test provided under schedule 7 of PPA
- r. Year wise Project Cost details
- s. Detail of PSDP allocation, releases and expenditures
- t. Approvals of Revised Construction Schedule from competent Authority
- u. All Reports about the water quality before the inauguration and at the time of inauguration
- v. Fault reports / inquiries conducted for the Sticking of Draft Tube gates.

- w. Report of Voith E&M Contractor regarding chocking of cooling water system dated March 14, 2018.
- x. All Minutes of Authority Meeting regarding decisions of T4HPP
- y. Fault Incidence Reports regarding stoppage of Units 11 to 14 in 1997 and 2000

**Record requested vide Letter No. IP/PAR/PD/T4/03 Dated June 05, 2020**

- a. File of Authority Minutes
- b. Project Appraisal Documents
- c. Loan Agreements
- d. Consultancy Agreement and Consultant Invoices along with queries.
- e. Comparison of Actual Cost with PC-I Costs
- f. IPCs certified by Consultants along with Noting and Comments
- g. Detail of advances issued / adjusted to Contractors / Consultants
- h. NOC from formations relating to environmental issues
- i. All Item Notes put up to the WAPDA Authority
- j. Prequalification documents of Contractors and Consultants
- k. Annual procurement plan
- l. Detail of Performance Guarantees / Securities with extensions
- m. Surveillance reports along with Inspection Reports
- n. Detail of Payments made to contractors for construction and removal of d/s cofferdam
- o. Report of Forensic Inspection Recommended by IC at the time of planned shutdown of the plant in order to determine the quantum of damage to turbines associated with inauguration.
- p. Revised Coordinated Construction Schedule (RCCS)
- q. Bank Aide Memorie of June 2017 and IPoE reports
- r. All inquiry reports
- s. Litigation cases
- t. Detail of procurements made by the consultants using WAPDA funds
- u. Stock verification Reports

**Record requested vide Letter No. IP/PAR/PD/T4/02 Dated June 04, 2020**

- a. Actual Energy Units Produced since inauguration by each Generating Unit of T4HPP (Month wise and Generating Unit wise)
- b. Planned / estimated production of all generating units
- c. Billing / Invoices to CPPA-g as per NEPRA Determination
- d. Power Purchase Agreement with CPPA-G
- e. Amendments to Power Purchase Agreements after installation of T4HPP

**Requested vide Letter No. IP/PAR/PD/T4/01 Dated June 03, 2020**

- a. Minutes of Meeting of GRC held in WAPDA House on January 13, 2020
- b. RCC Progress reports up to date
- c. ESMU monthly plans and progress achieved
- d. Second Consultative meeting held with GBHP Litigants on January 27, 2020 through GBTI at Hattian
- e. Minutes of GRC Meeting held on January 13, 2020 in T4HPP office
- f. Progress Reports of Community Development Projects under SIMF
- g. EOBI Worker registration issues. Progress reports showing number of workers registered with EOBI and number of workers not yet registered with EOBI (Contractor wise list)
- h. Detail of workers terminated and have received the termination benefits as per contract and Detail of works who have not yet received termination benefits
- i. Detail of fruit tree planted and handed over to the WAPDA by the contractor (as per section 2.6.3 of Monthly progress report No. 60)
- j. Progress Report on Environmental Mitigation and Monitoring Plant

**Record requested vide Letter No. IP/PAR/PD/T4/158 Dated May 18, 2020**

- a. World Bank letter dated September 13, 2018 in which it was stated that Commissioning, Guarantee testing and operations can only commence during next year high flow season of 2018.
- b. World Bank query to WAPDA in its email of August 10, 2017 in which it was questioned that what is the benefit of bringing one unit online in February 2017 vs cost that would be incurred.
- c. World Bank Aide Memoire dated June 21, 2017 stated that mission was informed that WAPDA is trying to bring the plant operation in Dec 2017 or January 2018. This is fraught with danger and great risk (as advised by IPoE)

without any benefits, as there is no water available during that period for incremental generation from T4HPP.

- d. World Bank and IPoE letter in which it was mentioned that the water would not be available for running the unit and thus no benefit of bringing one unit on line in Feb, 2018.
- e. E&M Contractor warning regarding extremely bad quality of water which will cause damage to Equipment.
- f. Minutes of IPoE Meeting in May, 2018 in which silt problems raised.
- g. PM T4CJV Letter dated February 27, 2018 where it was asked to PD to look the possibility to raise the water level of reservoir (426.7) meter 1,400 feet.
- h. IPoE Para 4.56 in which it is stated that existing of dead level in Feb, 2018 coupled with sediments build up in front of the intake.
- i. Detail reply submitted to Inquiry Committee Constituted on September 06, 2018 regarding premature inauguration of Tarbela 4<sup>th</sup> Extension HPP and on other issues.