Environmental Monitoring Report

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Pakistan: Balakot Hydropower Development Project

Prepared by the Project Implementation Unit of the Pakhtunkhwa Energy Development Organization, for the Islamic Republic of Pakistan and the Asian Development Bank (ADB).

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ABBREVIATIONS

ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
AQMS	Air Quality Monitoring System
CO	carbon monoxide
dB	decibel
DFO	Divisional Forest Officer
EE	Environment Expert
EEM	External Environmental Monitor
EIA	Environmental Impact Assessment
EPC	engineering, procurement and construction
GHG	greenhouse gases
HPP	hydropower project
HSE	health, safety, and environment
IRRE	Institute for Research on River Ecology
km	kilometer
KP	Khyber Pakhtunkhwa
MW	megawatt
NEQS	National Environmental Quality Standards
NOC	No Objection Certificate
OHS	occupational health and safety
PD	Project Director
PEDO	Pakhtunkhwa Energy Development Organization
PIU	Project Implementation Unit
PM	particulate matter
PMC	Project Management Consultant
SAEMR	Semi-Annual Environmental Monitoring Report
SDFO	Sub-Divisional Forest Officer
SO_2	Sulphur dioxide
SSEMP	Site-Specific Environmental Management Plan
WHO	World Health Organization

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1. INTRODUCTION

1.1. Preamble

1. This is the ninth Semi-Annual Environmental Monitoring Report (SAEMR) for the Balakot Hydropower Project (HPP,300 megawatt [MW]) covering the reporting period from July to December 2025.

1.2. Headline Information

2. During the reporting period, detailed engineering design activities—including planning for muck disposal areas—along with the review of the EPC Contractor's method statements and technical submissions, continued to progress. Construction works further advanced at major project components, including the dam diversion, residential colony, access roads, powerhouse, and headrace tunnel. In parallel, protection works and the development of the powerhouse site camp were also carried forward.

3. The Project Management Consultant's (PMC) environmental team, along with the Geologist of the PIU, the Deputy Team Leader (DTL), and the PMC's Geotechnical Expert, conducted site due diligence on July 31, 2025, at the spoil disposal area identified for the dam site. The due diligence report concluded that the site is not environmentally suitable for spoil disposal, with more than 50% of spoil disposal occurring in the reservoir area. In addition, on September 25, 2025, the Environmental Expert conducted due diligence on the spoil disposal area identified by the EPC Contractor for Adit-1 and the headrace tunnel (HRT) and found the site suitable for spoil disposal. The PMC also approved the design report for the upstream inclined surge tunnel on December 02, 2025. During the reporting period, identification of the spoil disposal area for the dam site and the detailed design for the powerhouse and A1 & HRT spoil disposal sites remained in progress.

4. On September 02, 2025, the PMC's Environmental Expert (EE) delivered a presentation on the health, safety, and environmental (HSE) portfolio of the Project to the ADB and AIIB safeguard team at the ADB office, Islamabad. During the presentation, the EE explained various milestones achieved and issues resolved during the period from January to July 2025, with an emphasis on the health and safety aspects of the construction activities.

5. A joint site audit was carried out by the ADB and AIIB safeguard team on September 04, 2025, to assess compliance of the ongoing construction activities with the HSE and safeguard requirements. The team identified several gaps, including unsatisfactory living conditions at the EPC Contractor's powerhouse labour camp, insufficient air quality monitoring frequency inside the tunnels, inadequate safety signage along Access Road R-3, and delays in the finalization of spoil disposal sites by the EPC Contractor. The PIU subsequently transmitted the identified gaps to the EPC Contractor for necessary rectification. The EPC Contractor rectified most of the identified gaps by the end of the reporting period.

6. On September 11, 2025, the External Environmental Monitor (EEM) visited the construction sites. The major gaps identified by the EEM include the delay in design and construction of sedimentation tanks, the non-provision of color-coded waste bins, and oil spills. The gaps identified by the EEM were shared with the EPC Contractor in the form of a Corrective Action Plan (CAP) for necessary rectification. Till the end of the reporting period, the EPC Contractor had rectified most of the gaps.

7. On September 25, 2025, the ADB Country Director, together with a safeguard team, visited the Downstream Surge Shaft Tunnel to assess the causes of a serious occupational, health and safety accident that occurred on September 23, 2025.

8. During the reporting period, on October 02, 2025, the EPC Contractor conducted a final assessment test and examination for the 18 trainees enrolled in the six-month vocational

training program at the Government Skill Development Centre, Hassa Balakot. The assessments covered both trades, namely Computer Operations and Electrician, marking the completion of the second training initiated in May 2025 for eligible candidates from Paras Village.

9. On October 07, 2025, the PEDO's Audit team conducted a detailed investigation meeting concerning the accident that occurred on September 23, 2025, which resulted in a hand amputation injury to a worker. The Audit team subsequently carried out a site visit on October 08, 2025, to assess site conditions related to the incident.

10. The River Diversion Ceremony of the Balakot Hydropower Project (300 MW) was held on October 25, 2025, marking a significant milestone in the project's development with the completion of the diversion tunnel.

11. During the third and fourth quarters of the reporting period, the EPC Contractor conducted instrumental environmental monitoring at the work sites and camps, including the newly constructed camp at the powerhouse site. A detailed description of the results obtained has been given in **Section 5.2.**

12. During the reporting period, the EPC Contractor conducted several occupational health and safety (OHS) training sessions to enhance workplace safety culture and emergency preparedness. On November 14 and 15, 2025, a third-party safety training session was delivered by IntelloACE Trainers and Consultants for various trades. The first day focused on first aid and scaffolding safety at the dam site office, while the second day covered safe forklift operation and heavy machinery safety. Additionally, the Annual Occupational Health and Safety (OHS) Training was organized on December 16-17, 2025, at the project site in collaboration with Rescue 1122, District Mansehra. The training was participated in by the EPC Contractor's HSE officers, the PIU field staff, and the PMC HSE staff. This training emphasized emergency response, first aid administration, fire extinguishing, and oil spill response. The first day consisted of classroom-based sessions on OHS awareness, hazard identification, risk prevention, and first aid, while the second day involved practical demonstrations, including first aid scenarios, firefighting drills, incident response, emergency evacuation, and rescue simulations at the crushing plant site. These training initiatives enhanced workers' awareness, improved emergency response capabilities, and positively contributed to strengthening the overall health and safety culture at the project site.

13. During the reporting period, a total of 27 accidents were recorded, including 25 minor, one major, and one fatal. The fatal accident occurred at the A2 site during the installation of a ventilation fan inside the tunnel when the axial flow fan became unstable and fell on the ground, striking the worker's chest, abdomen, and head. The fatal accident caused the death of the Chinese Foreman. In the major accident, the worker's hand entangled in the rotating mixer shaft of a feeding hopper, resulting in a severe injury to the right forearm. Despite surgical intervention, the hand was subsequently amputated due to infection after nine days.

14. The ADB's consultants conducted labour and OHS audit at the Site from November 24 to 28, 2025. The audit assessed the implementation status of the EPC Contractor's OHS management system and held meetings with the PIU, PMC, and EPC Contractor's HSE staff. The audit report, however, remained awaited till the end of the reporting period.

15. During the reporting period, the PIU received two environment-related complaints from the project area communities. Both complaints were effectively resolved through the GRM in place. The Paras community complaint, received on October 13, 2025, was addressed and resolved by the EPC Contractor, while in the second complaint, received on November 12, 2025, the PMC conducted a detailed investigation. The report furnished to the effect of the investigation was shared by the PIU with the complainant and clarified to him that the complaint is not based on ground facts.

16. Consequent upon the unfortunate demise of the PMC's Health and Safety (H&S) Monitor on December 04, 2025, the proposal for the new appointment was submitted to the PIU for approval, which remained under process until the end of the reporting period.

2. PROJECT DESCRIPTION AND CURRENT ACTIVITIES

2.1. Project Description

17. Balakot HPP (300 MW) is a run-of-the-river scheme to be constructed on the Kunhar River in its 12-kilometer (km) stretch from Paras to Sangar village in District Mansehra of Khyber Pakhtunkhwa (KP) province. Upon completion, 1,143 gigawatt hours of clean energy will be delivered to the national grid yearly.

18. The Project dam site is located in Paras village, around 2 km downstream of the Sukki Kinari HPP (884 MW) tailrace, while the powerhouse site is proposed in Ganhool village of Balakot. The 9.1 km-long headrace tunnel of 8-meter (m) diameter will divert 154 m^3/second design flow of the Kunhar River water to the powerhouse to generate 300 megawatts of electricity. The Project residential colony is identified in Sangar village.

19. Access road to the dam and power intake is proposed to off-take from National Highway (N-15) on the left side of the Kunhar River in Paras village.

20. As exhibited in the EPC Contract, the following is the brief scope of works:

- Project basic and detailed design
- Temporary works
- Diversion works
- Construction of dam
- Intake structures
- Adit tunnels (adits-1,2 and 3)
- Headrace tunnel
- Surge shaft
- Powerhouse
- Access roads (temporary and permanent)
- Residential colony
- Switchyard
- Transmission line

21. The Project brief salient features are in **Table 2.1** followed by location maps and the Project setting in **Figure 2.1** to **2.5.**

Table 2.1: Brief Salient Features

S/NO	DESCRIPTION	UNIT	DETAIL
1	**HYDROLOGY AND DESIGN FLOWS**		
1.1	River		Kunhar
1.2	Catchment area of the dam site	km^2	1939
1.3	(Average) flow at the intake	m^3/s	87
1.4	Design Discharge	m^3/s	153.9
1.5	Design Flood T=10,000 years	m^3/s	3706
1.6	Probable Maximum Flood	m^3/s	5043
2	**RESERVOIR**		
2.1	Normal Operating Level (NOL)	masl	1288.0
2.2	Minimum Operating Level (Min. OL)	masl	1283.0
2.3	Surface area (at NOL)	km^2	0.28
2.4	Reservoir length (at NOL)	km	2.2
2.5	Gross storage capacity (at NOL)	$X10^6\ m^3$	3.65
2.6	Regulating storage capacity (NOL)	$X10^6\ m^3$	1.2
3	**DAM STRUCTURE**		
3.1	Dam type		Curved Concrete Gravity Dam
3.2	Dam crest elevation	masl	1292.0
3.3	Maximum height above the riverbed	m	35.0
3.4	Maximum height above foundation	m	49.0
3.5	Crest length	m	146.0
4	**SPILLWAYS AND LOW-LEVEL OUTLETS/FLUSHING SLUICES**		
4.1	Spillway type		Upper WES spillway + bottom outlet
4.2	Upper spillway crest elevation	masl	1278.0
4.3	Upper spillway gates no. and type		3 (radial gates)
4.4	Upper spillway gates size (W x H)	mxm	11 X 10
4.5	Bottom outlet invert elevation	masl	1253.0
4.6	Bottom outlet gates no. and type		2 ~~3~~ sluice gate + 2 radial gate
4.7	Low-level spillway size (W x H)	mxm	6x8
5	**RIVER DIVERSION**		
5.1	Construction Flood	m^3/s (T=20 years)	900
5.2	Diversion type		Diversion tunnel + bottom outlet, with cofferdam
5.3	Upstream Coffer dam type		CSG cofferdam
5.4	Upstream coffer dam crest elevation	masl	1272.0
5.5	Downstream coffer dam type		CSG cofferdam
5.6	Downstream coffer dam crest elevation	masl	1252.5
5.7	Diversion tunnel type		Archway
5.8	Diversion tunnel no. (-)		1
5.9	Diversion tunnel size (W x H)	mxm	Archway (7,5 x 8,0)
5.10	Diversion tunnel length	m	650
5.11	Diversion tunnel slope	%	1.5

S/NO	DESCRIPTION	UNIT	DETAIL
5.12	Diversion tunnel inlet invert elevation	masl	1261.0
5.13	Diversion tunnel outlet invert elevation	masl	1248.0
6	**POWER INTAKE STRUCTURE**		
6.1	Intake type		Bank-type intake
6.2	Trash racks no.		4
6.3	Trash rack size (W x H)	mxm	8 x 1 0
6.4	Service gates no.		2 (1 emergency gate)
6.5	Service gate size (W x H)	mxm	4 x 8
6.6	Intake crest elevation	masl	1271.0
7	**HEADRACE TUNNEL**		
7.1	Tunnel section		Circular concrete-lined (8.0 m inner diameter)
7.2	Length up to the surge tank	m	9137
7.3	Tunnel slope		0.56%、0.00%、1.11%
8	**UPSTREAM INCLINED SURGE TUNNEL**		
8.1	Type		Concrete-lined circular surge shaft+inclined surge tunnel
8.2	Internal diameter	m	14.5
8.3	Length of surge tunnel	m	568
8.4	Bottom elevation of surge shaft	masl	1203
9	**PRESSURE TUNNEL/SHAFT & PENSTOCK**		
9.1	Pressure tunnel/shaft main section type and size		Steel-lined circular cross-section (5.6 m internal diameter)
9.2	Pressure tunnel/shaft length	m	375
9.3	Penstock length	m	88
9.4	Branch Section Type		Manifold (3 branches)
9.5	Size of each branch	m	2.2m internal diameter conduits
9.6	Max. Length of branch	m	～30
10	**POWERHOUSE AND SUBSTATION**		
10.1	Powerhouse type		Conventional underground cavern
10.2	Main cavern general dimensions (L x W x H)	m	89.28x20.40x37.86
10.3	Turbine type		Francis
10.4	Number of units		3
10.5	Turbine axis elevation	masl	1054,0
10.6	Transformer/Substation type		Underground cavern (adjacent to the main powerhouse cavern)
10.7	Transformer cavern general dimensions (L x W x H)	m	94.82 x17.40 x31.79
11	**DOWNSTREAM INCLINED SURGE TUNNEL**		
11.1	Type		Concrete-lined inclined surge tunnel
11.2	Internal diameter	m	7.5x9.125
11.3	Length of surge tunnel	m	505
11.4	Surge tunnel bottom elevation	masl	1028.0
12	**TAILRACE**		

S/NO	DESCRIPTION	UNIT	DETAIL
12.1	Type		Circular tunnel with transition to an archway section at the final length and Outlet portal
12.2	Tunnel section		Circular concrete lined (8.0 m diameter)
12.3	Length up to the final transition section	m	1646.5
12.4	Tunnel slope up to the final transition section	%	0.122%, -18.45% (ascending slope)
12.5	Tunnel final section		Archway concrete lined section (8.0 W x 8.0 H)
12.6	Length from transition to outlet	m	50
12.7	Tunnel slope up to the outlet portal	%	0.23 (ascending slope)
13	**POWER AND ENERGY**		
13.1	Gross Head	m	229.0
13.2	Design Net Head (m)	m	217.6
13.3	Installed plant capacity	MW	300 (at the generator)
13.4	Average annual energy production	GWh	1144（average of 55 years）
14	**PROJECT ACCESS FACILITIES**		
14.1	Access road to dam Left side R1 (length)	m	512 m (from Sharan Road, connection to National Highway N-15 at the left side of Kunhar River, nearby Paras village)
14.2	Access road to Diversion tunnel R2 (length)	m	138m (from the dam bridge deck up to the Sediment by-pass tunnel intake)
14.3	The access road to the Main Access tunnel Power House R3 (length)	m	3254m (From Sangar connection from National Highway N-15 to Main Access tunnel Power House
14.4	The access road to Surge tank R4 (length)	m	290m (from National Highway N-15 to access road, Surge tank
14.5	The access road to Tailrace Tunnel R5 (length)	m	823m (from R3 connection to tailrace tunnel
14.6	Access road to Permanent staff Residential Colony R6 (length)	m	611m (from N15 connection to the Resident colony
14.7	Permanent Staff Residential Colony	m^2	Covered area= 11995.5 m^2

Figure 2.1: Project Location in Pakistan

Figure 2.2: Project Location in District Mansehra

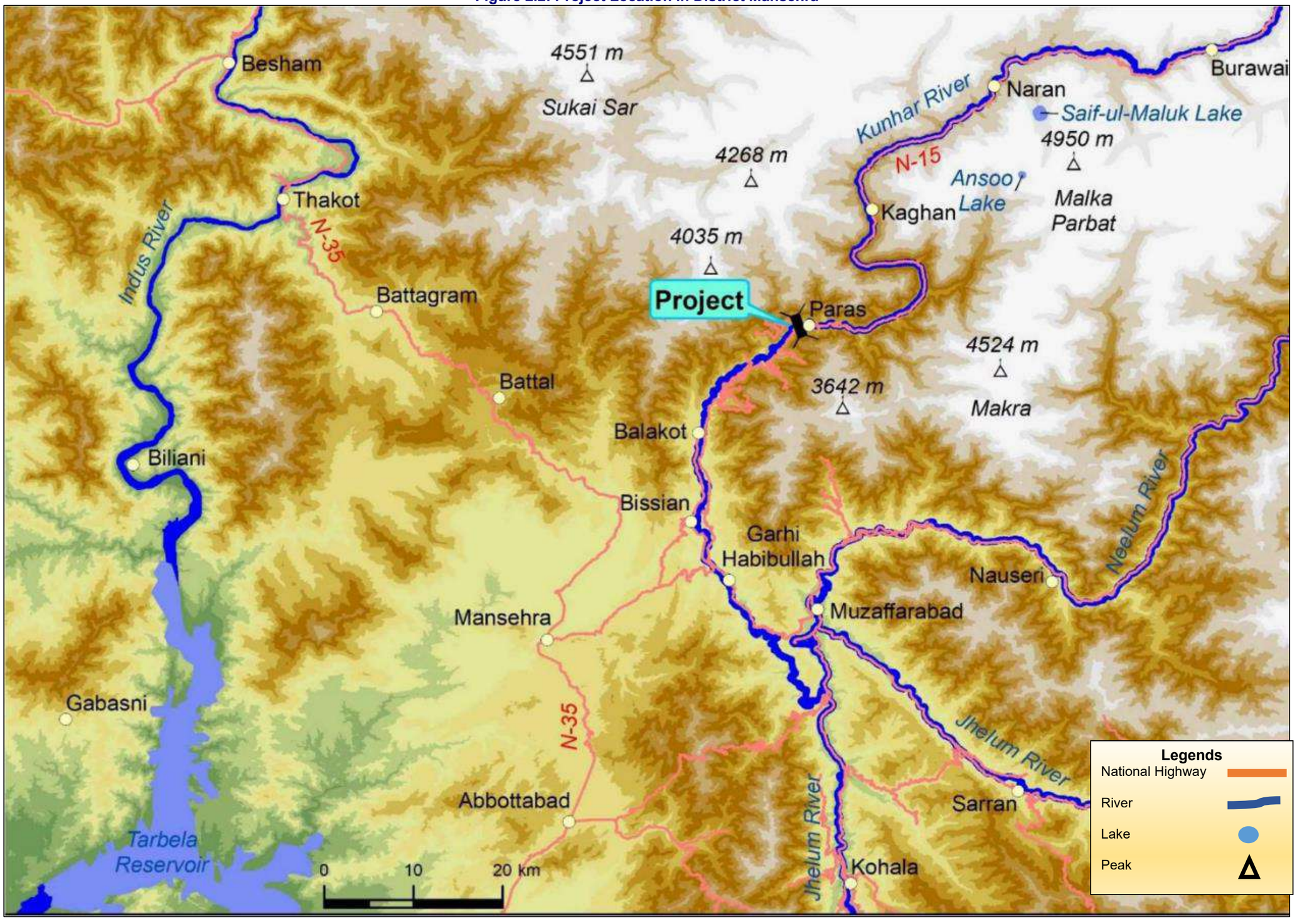


Figure 2.3: Project Layout Map

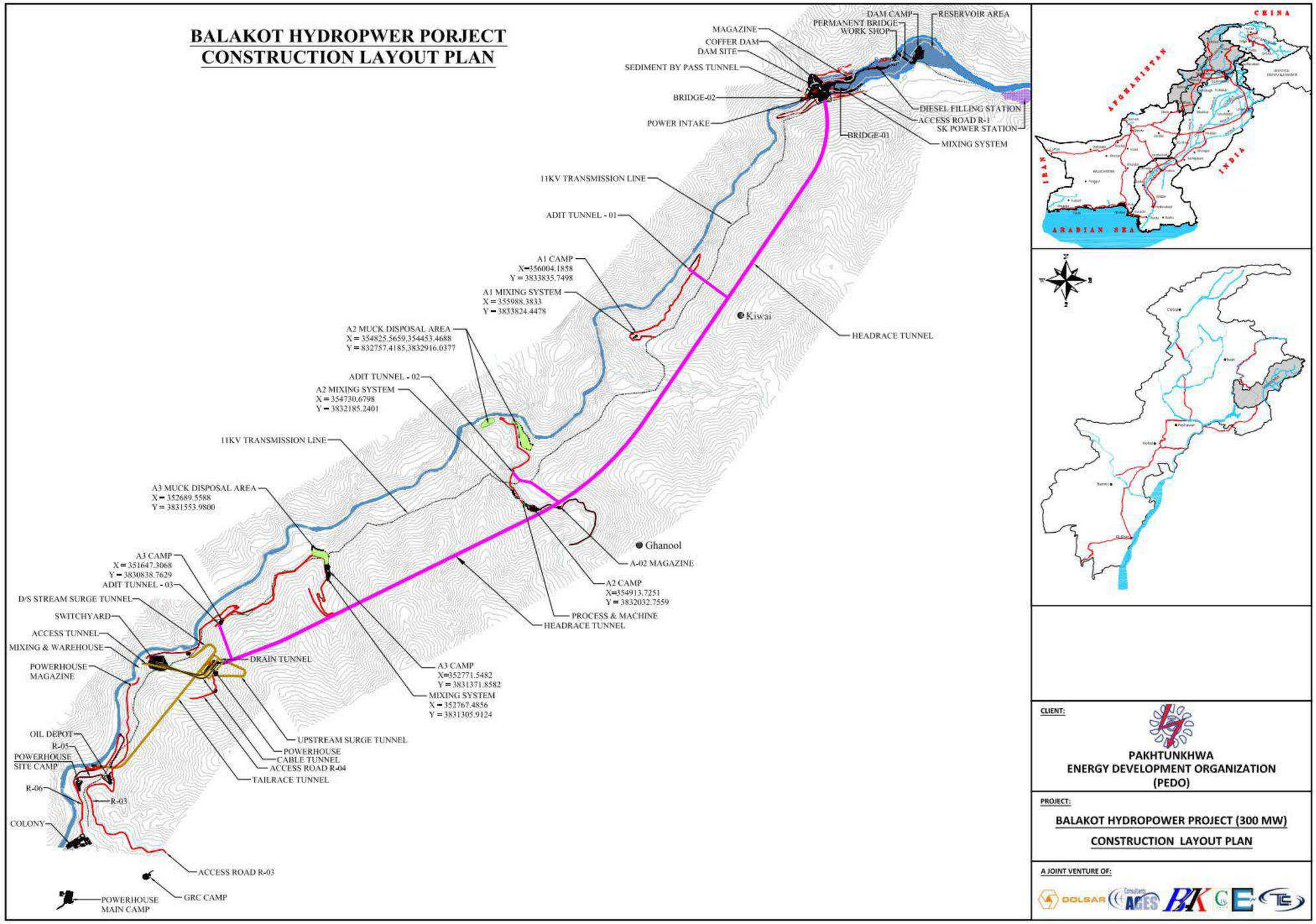


Figure 2.4: Project Setting-Dam site

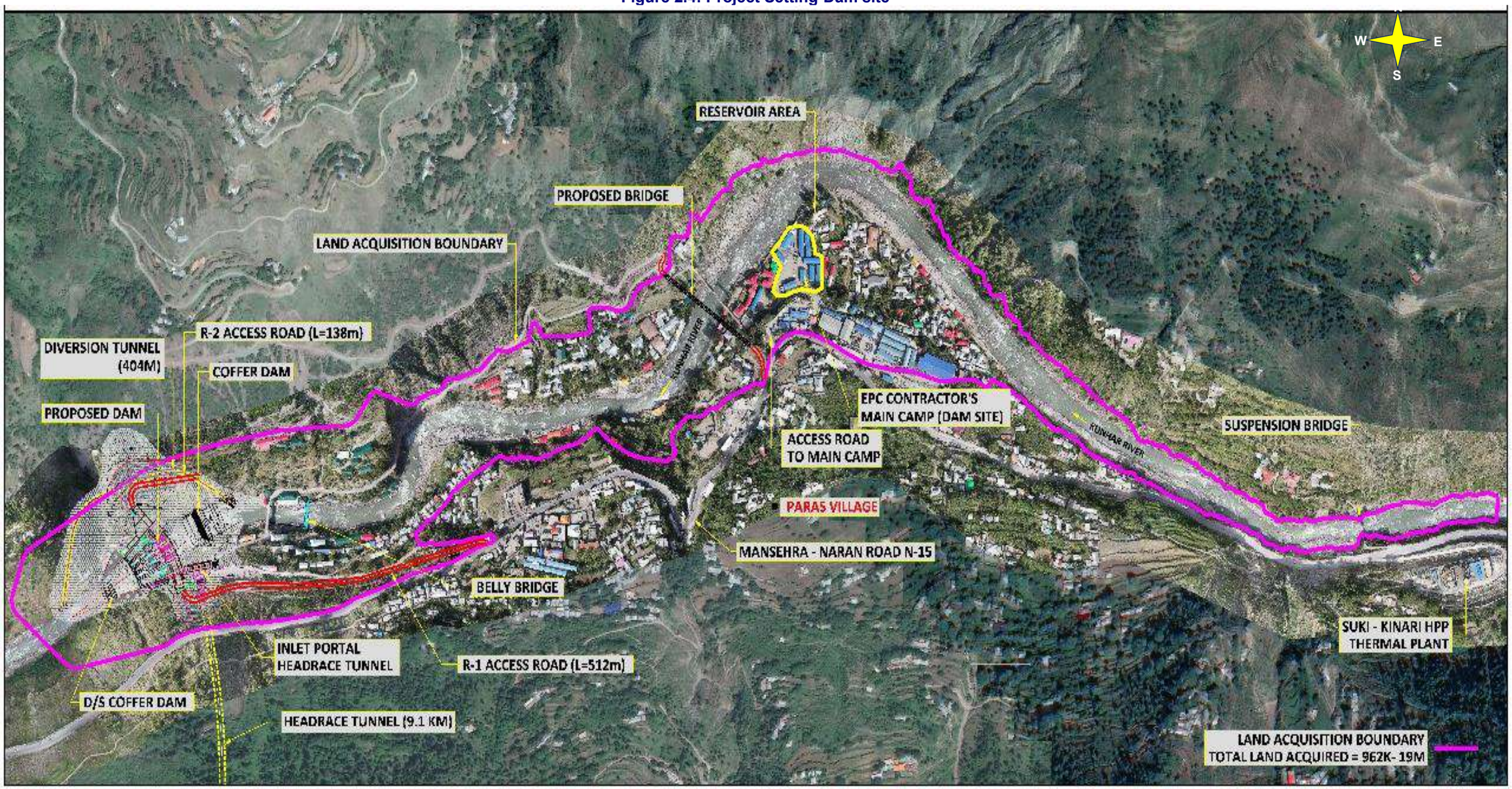
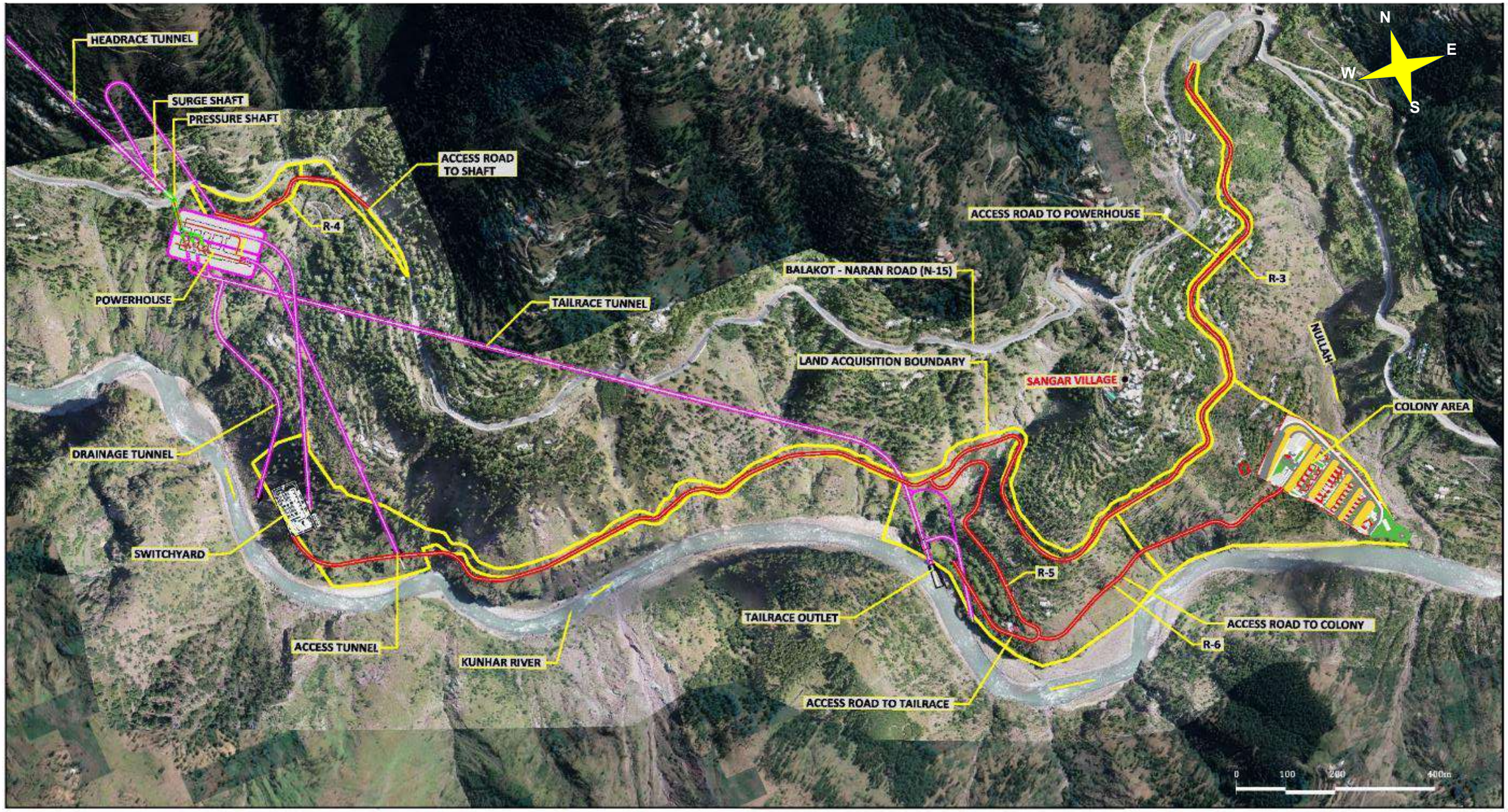


Figure 2.5: Project Setting-Powerhouse and Colony sites



2.2. Project Contracts and Management

2.2.1. Project Implementation Arrangements

22. Balakot HPP (300 MW) is being implemented through the arrangements in **Table 2.2**.

Table 2.2: Project Implementation Arrangement

Arrangement	Organization/Agency
Funding Sources	• Asian Development Bank (ADB) and Asian Infrastructure Investment Bank (AIIB) through a loan to the Government of Pakistan (Loan No: 4057/8397 (AIIB)-PAK) • Government of Khyber Pakhtunkhwa
Executing Agency	Energy and Power Department, Government of Khyber Pakhtunkhwa
Implementing Agency	Pakhtunkhwa Energy Development Organization (PEDO), Government of Khyber Pakhtunkhwa
Project Management Consultant	Joint Venture of: • DOLSAR Engineering Inc. Co. (Turkey) Lead Firm • AGES Consultants • BAK Consulting Engineers • CivTech Associates • Electra Consultants • Techno Legal Consultants (Pvt.) Limited from Pakistan
EPC Contractor	Joint Venture of China Gezhouba Group Company (CGGC), China & Ghulam Rasool and Company Pvt. Ltd (GRC), Pakistan

23. For the Project development, the government of KP signed a loan agreement with ADB on May 21, 2021, which became effective on July 07, 2021.

24. As AIIB is the co-financier of the Project, the loan agreement was also signed with AIIB, which is effective from October 25, 2021.

Consultancy Services Contract Award (2020)

Construction Contract Award (2021)

25. Brief details of the PIU, PMC, and the EPC Contractor are given hereunder.

26. **PIU.** The PIU of Balakot HPP (300 MW), responsible for procurement and supervision of the Project, is currently under establishment by the Implementing Agency (IA), i.e., Pakhtunkhwa Energy Development Organization (PEDO).

27. **Figure 2.6** shows the organogram of the PIU, wherein, as exhibited in **Table 2.3,** the PD, deputy directors, and assistant directors, along with some of the support staff, are already on board, while procurement of the remaining personnel will be initiated when the need arises.

Figure 2.6: PIU Organogram

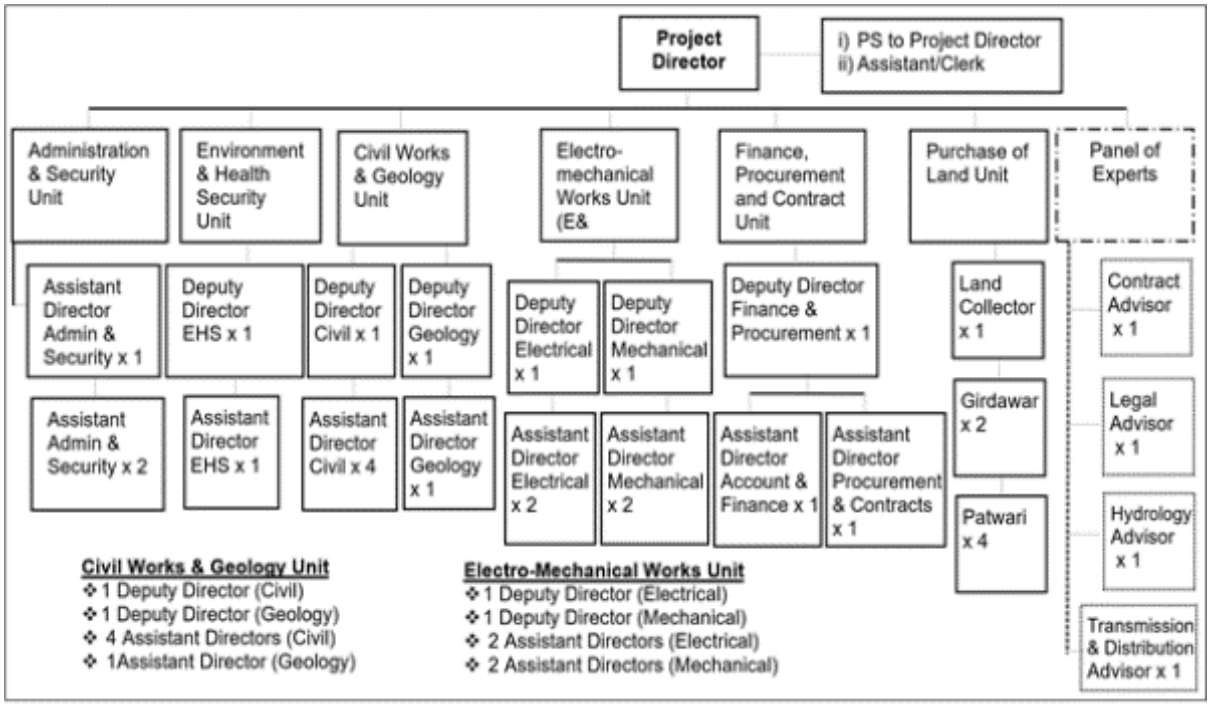


Table 2.3: PIU Staff Deployed During the Reporting Period

Staff Designation	Male/Female	No
Project Director (PD)	M	1
Deputy Director (Civil)	M	2
Deputy Director (Social & Resettlement)	M	1
Deputy Director (Environment, Health, Safety, and Gender)	F	1
Deputy Director (Finance)	M	1
Deputy Director (Geology)	M	1
Deputy Director (Monitoring and Evaluation)	M	1
Assistant Director (Finance)	M	1
Assistant Director (Electrical)	M	2
Account Assistant	M	1
Land Patwari	M	1
Assistant Director (Social and Resettlement)	F	1

28. As evident from the table above, PIU is headed by the Project Director (PD), with whom the overall responsibility of environmental management and monitoring rests. He is assisted by the Environment and Health Security Unit in matters related to the environmental, health, and safety (HSE) aspects of the Project. In this regard, Ms. Ibtesaam Zaima, the Deputy Director, HSE and Gender is on board since March 2022 with full-time inputs and can be reached via:

Phone No: +92-3319844851
Email ID: ibtesaamzaima3@gmail.com

29. The Deputy Director, HSE and Gender is assisted by an Assistant Director (Social and Resettlement) who joined PIU in the last week of December 2022.

30. Under the provisions of the EPC Contract, the PIU project office was established in Balakot at the address given below and has been operational since June 2022.

PIU Balakot HPP (300 MW) Site Office
County Hotel, Shohal Najaf Khan
Kaghan Road Balakot
District Mansehra
Khyber Pakhtunkhwa, Pakistan
Phone No. 0997-360003

31. **PMC.** On September 03, 2020, PEDO entered into a Management Consultancy Service Agreement for Balakot HPP (300 MW) with the joint venture (JV) of DOLSAR Engineering Inc. Co. (Turkey), AGES Consultants, BAK Consulting Engineers, CivTech Associates, Electra Consultants, and Techno Legal Consultants (Pvt.) Limited from Pakistan. The JV is led by DOLSAR Engineering Inc. Co. (Turkey).

32. Consultancy services have been effective for 84 months since the commencement of services on September 11, 2020. During this period, the JV will provide services specified in the consultancy contract as PMC, and will act on behalf of PEDO as the "Project Manager/Engineer".

33. **Table 2.4** shows the chronological order of the procurement of consultancy services.

Table 2.4: PMC Procurement Milestones

S/No	Description	Date
1	Expression of Interest	July 29, 2019
2	Technical & Financial Proposals	November 29, 2019
3	Opening of Financial Proposals	May 19, 2020
4	Contract Negotiation Meetings	August 6 and 07, 2020
5	ADB Comments on / Concurrence to Negotiated Contract	August 25, 2020
6	Signing of Contract for Consultancy Services	September 3, 2020
7	Commencement of Services	September 11, 2020

34. **Table 2.5** exhibits details of the PMC's personnel deployed during the reporting period.

Table 2.5: PMC's Personnel Deployed to the Project

S/No	Designation	Inputs
Key Staff (International)		
1.	Project Manager - Team Leader	Full Time
2.	Procurement Expert	Intermittent
3.	Contract Manager	Intermittent
4.	Geotechnical Expert	Intermittent
5.	Hydraulics Expert	Intermittent
6.	Sediment Management Expert	Intermittent
7.	Hydro-Mechanical Expert	Intermittent
8.	Electrical Expert	Intermittent
Key Staff (National)		

S/No	Designation	Inputs
1.	Deputy Team Leader	Full Time
2.	Contract Specialist	Full Time
3.	Document Controller (Monitoring)	Full Time
4.	Chief Engr. (Dam & Surface Works)	Full Time
5.	Chief Engr. (Underground Works)	Full Time
6.	Civil Engineer (Other Surface Works)	Full Time
7.	Quality Assurance Engr. (Dam & Surface Works)	Full Time
8.	Civil Engineer (Tunnel)	Full Time
9.	Quality Assurance Engr. (Underground Works)	Full Time
10.	Health and Safety Monitor	Full Time
11.	Geologist - A	Full Time
12.	Electricity Tariff and PPA Expert	Intermittent
13.	Transmission Line Engineer	Intermittent
14.	Resettlement Expert	Intermittent
15.	Gender/Community Mobilization Expert	Intermittent
16.	Environmental Expert	Intermittent
17.	Structural Engineer	Intermittent
Non-Key Staff (National)		
1.	Planning Engineer	Full Time
2.	Cost / Time Controller	Full Time
3.	Environmental Officer	Full Time
4.	CAD Operators	Full Time
5.	Resettlement Assistant	Full Time
6.	Office Assistant	Full Time
7.	Accounts Assistant	Full Time
8.	Computer Operator	Full Time
9.	Office Manager	Full Time
10.	Inspectors (Dam & Surface Works)	Full Time
11.	Inspectors (Dam & Surface Works)	Full Time
12.	Inspectors (Dam & Surface Works)	Full Time
13.	Inspectors (Dam & Surface Works)	
14.	Inspectors (Underground Works)	Full Time
15.	Inspectors (Underground Works)	Full Time
16.	Inspectors (Underground Works)	Full Time
17.	Inspectors (Underground Works)	Full Time
18.	Inspectors (Underground Works)	Full Time
19.	Lab. Technician	Full Time
20.	Lab. Technician	Full Time
21.	Lab. Technician	Full Time
22.	Lab. Technician	Full Time
23.	Junior Engineer	Full Time
24.	Junior Engineer	Full Time
25.	Junior Engineer	Full Time
26.	Junior Engineer	Full Time
27.	Junior Engineer	Full Time
28.	Architecture	Intermittent

S/No	Designation	Inputs
29.	Junior Geologist	Full Time
30.	Junior Geologist	Full Time
31.	Junior Geologist	Full Time
32.	Junior Geologist	Full Time
33.	Office Assistant	Full Time
34.	Accountant	Full Time
35.	Computer Operator	Full Time
36.	Patwari-1	Full Time
37.	Patwari-2	Full Time

35. Since the commencement of the consultancy services, Engineer Assad Ali Khan, the PMC's Environmental Expert (EE), is on board with intermittent inputs. The EE can be approached through:

Phone No: +92-3369555505
PMC official email ID: dtlbalakothpp@yahoo.com

36. Najum-us-Saqib, an Environmental Officer, joined the PMC environmental team on December 12, 2024, and is stationed at the PMC's field office in Paras village (Dam site). He is supervising the environmental portfolio activities at the site and can be reached via:

Phone No: +92- 3469750663
PMC official email ID: dtlbalakothpp@yahoo.com

37. As stated in the headline information, due to the unfortunate demise of the PMC's H&S Monitor on December 04, 2025, the proposal for the new appointment was submitted to the PIU for approval, which remained under process until the end of the reporting period. The name and contact information of the H&S Monitor will be provided once deployed to the project.

38. To supervise the project activities, the PMC has established an office at the dam site at the address given below. This offices is operational since June 2022.

PMC Site Office
Taj Mahal Hotel, Opposite Sohail Filling Station,
Main Bazar Paras, Kaghan Road,
Tehsil Balakot,
District Mansehra,
Khyber Pakhtunkhwa, Pakistan

39. **EPC Contractor.** The construction contract of Balakot HPP (300 MW) was awarded to the JV of China Gezhouba Group Company (CGGC), China & Ghulam Rasool and Company Pvt. Ltd (GRC), Pakistan, on March 09, 2021.

40. Consequent to fulfillment of the requisite conditions of the EPC Contract, PEDO notified September 27, 2021, as the Effective Date for the EPC Contract.

41. Various milestones achieved during the procurement process of the EPC Contract are in **Table 2.6.**

Table 2.6: EPC Contract Procurement Milestones

S/No	Description	Date
1.	Invitation for Bids	November 23, 2019
2.	Site visit to Bidders	December 10, 2019
3.	Pre-Bid Meeting	December 13, 2019
4.	Bid Submission	June 15, 2020
5.	Technical Bid Opening	June 15, 2020
6.	Financial Bid Opening	December 15, 2020
7.	Notification of Award	February 10, 2021
8.	Contract Signing	March 09, 2020
9.	Effective Date	September 27, 2021

42. The EPC Contractor's environmental obligations are mainly specified in Volume-01 of 07 (Appendix-9) and Volume-03 of 07 (GCC & SCC) of the EPC Contract.

43. Under the provisions of the conditions of the contract, preparation of the SSEMP is one of the EPC Contractor's contractual obligations. Accordingly, the EPC Contractor prepared the SSEMP, which is primarily based on the essence of the approved EIA report and site requirements, with due emphasis given to the Safeguard Policy Statement 2009 guidelines and conditions contained in the "Environmental Approval" granted by the Khyber Pakhtunkhwa Environmental Protection Agency (KP EPA) on July 06, 2021. The Employer approved the SSEMP on December 30, 2022, before the initiation of the construction activities at the site.

44. In the last week of December 2024, after the EPC Contractor had finalized the locations for camps, batching plants, access roads, sedimentation tanks, and magazines, and had obtained approval for two muck disposal sites, the PMC instructed the EPC Contractor to update the approved SSEMP by January 15, 2025. The EPC Contractor accordingly updated the SSEMP and submitted it to the PMC for review. Upon the PMC's review and recommendations, the updated SSEMP was submitted to the ADB for further review. The ADB review comments were subsequently incorporated, and on June 04, 2025, a revised version was submitted to the PIU for review and approval thereof. The PIU transmitted the updated SSEMP to the ADB, which granted consent to the same on July 23, 2025. Consequently, in pursuance of Sub Clause 9.8 "Protection of the Environment" Attachment 3 of Volume 01 of 07 of the EPC Contract, the PMC issued a No Objection Certificate (NOC) to the EPC Contractor on July 24, 2025.

45. During all three phases of the project i.e. pre-construction, construction, and the defects liability period (DLP), the EPC Contractor will manage the health, Safety, and Environment (HSE) portfolio by implementing the measures outlined in the SSEMP, adhering to good practices, following issued instructions, and addressing gaps identified in monitoring reports throughout the duration of the contract.

46. **Figure 2.7** exhibits the EPC Contractor's HSE organogram, followed by **Table 2.7** showing details of the HSE team on board so far.

Figure 2.7: EPC Contractor's HSE Team Organogram

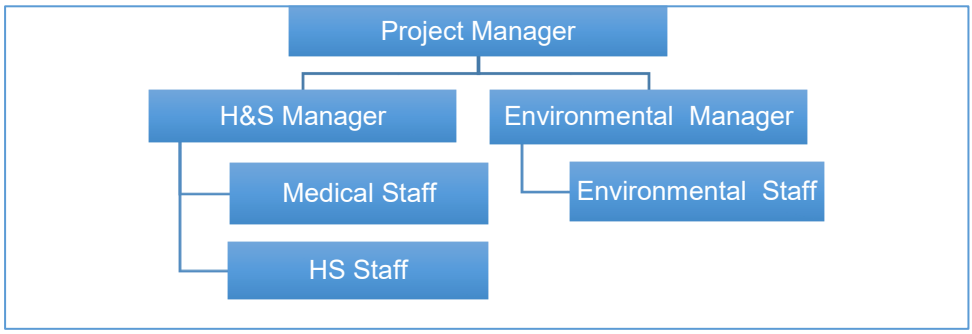


Table 2.7: EPC Contractor's HSE Team

S/NO	Name	Designation	Duty Station	Contact Number
1	Qi Xiu Feng	H & S Manager	Office and Site	+92-345-5386888
2	Wang Chaowei	QHSE Director	Office and Site	+92-344-1783042
3	Hai Xinglong	Quality and Environment Engineer	Office and Site	+92-341-407665
4	Wu Qiaojin	HSE Officer	Office and Site	+92-341-0407671
5	Irshad Saeed	Environmental Manager	Office and Site	+92-305-9028481
6	Fazli Zul Jalal	HSE Manager JV(GRC)	Office and Site	+92-324-5890426
7	Syed Umair Shah	HSE Officer	Office and Site	+92-343-9899715
8	Ali Haider Shah	HSE Officer	Office and Site	+92-310-5005803
9	Saeed ul Haq	HSE Officer	Dam Site	+92-346-8292024
10	Syed Hassan Shah	HSE Officer	Dam Site	+92-343-2152402
11	Rashid Hussain	HSE Officer	A-3 Adit Tunnel	+92-341-9304247
12	Muhammad Ajmal	HSE Officer	Dam Site	+92-301-3381622
13	Naeem Yousaf	HSE Officer	Powerhouse	+92-345-3845827
14	Tayyab Ur Rehman	HSE Officer	Dam Site	+92-343-9560113
15	Zeeshan Sadique	HSE Officer	Dam Site	+92-349-5323408
16	Zeeshan Ahmed	HSE Officer	Powerhouse	+92-347-2229888
17	Saddam Hussain	HSE Officer	Powerhouse	+92-345-6321546
18	Shahmeer Jan Khan	HSE Officer	Powerhouse	+92-342-7274498
19	Ahmed Raza Khan	HSE Officer	Powerhouse	+92-332 -8589253
20	Syed Adnan Shah	HSE Officer	Downstream Surge Shaft Tunnel	+92-310- 5479434
21	Ameer Hamza	HSE Officer	Powerhouse	+92-344- 3669141
22	Usman Rasheed	HSE Officer	Upstream Surge Shaft Tunnel	+92-310- 5022413
23	Asim Razzaq	HSE Officer	Upstream Surge Shaft Tunnel	+92-314-5212896
24	Ahsan Ali	HSE Officer	Adit-2	+92-341-4351519
25	Hashir Naveed	HSE Officer	Crush Plant	+92-348-5035503
26	Shahzad Ali Shah	HSE Officer	Powerhouse	+92-348-9364470
27	Mehmood ul Hassan	HSE Officer	Upstream Surge Shaft Tunnel	+92-346 1340289

2.2.2. Project HSE Safeguard Team

47. From the details given above, the HSE personnel responsible for the HSE safeguards are collectively detailed in **Table 2.8**.

Table 2.8: Details of HSE Personnel

Organization	Job Title	Name	Contact Details
ADB	Principal Environmental Specialist (Country Environment Focal)	Nurlan Djenchuraev	ndjenchuraev@adb.org
	Environment Specialist (Consultant) Pakistan Resident Mission	Shazia Shahid	sshahid.consultant@adb.org
PIU	Deputy Director HSE and Gender	Ibtesaam Zaima	ibesaamzaima3@gmail.com
PMC	Environmental Expert	Assad Ali Khan	dtlbalakothpp@yahoo.com
	Health and Safety Monitor	New appointment under process[1]	
	Environmental Officer	Najum-us-Saqib	
EPC Contractor	H & S Manager	Qi Xiu Feng	cggcgrcjvbk@gmail.com
	QHSE Director	Wang Chaowei	
	Quality and Environment Engineer	Hai Xinglong	
	Environmental Manager	Irshad Saeed	
	HSE Manager	Fazli Zul Jalal	
	HSE Officer	Wu Qiaojin	
	HSE Officer	Syed Umair Shah	
	HSE Officer	Ali Haider Shah	
	HSE Officer	Saeed ul Haq	
	HSE Officer	Syed Hassan Shah	
	HSE Officer	Rashid Hussain	
	HSE Officer	Muhammad Ajmal	
	HSE Officer	Naeem Yousaf	
	HSE Officer	Tayyab Ur Rehman	
	HSE Officer	Zeeshan Sadique	
	HSE Officer	Zeeshan Ahmed	
	HSE Officer	Saddam Hussain	
	HSE Officer	Shahmeer Jan Khan	
	HSE Officer	Ahmed Raza Khan	
	HSE Officer	Syed Adnan Shah	
	HSE Officer	Ameer Hamza	
	HSE Officer	Usman Rasheed	
	HSE Officer	Asim Razzaq	
	HSE Officer	Ahsan Ali	
	HSE Officer	Hashir Naveed	
	HSE Officer	Shahzad Ali Shah	
	HSE Officer	Mehmood ul Hassan	

2.3. Project Activities during the Current Reporting Period

48. During the reporting period, detailed engineering design activities—including planning for muck disposal areas—along with the review of the EPC Contractor's method statements and technical submissions, continued to progress. Construction works further advanced at major project components, including the dam, residential colony, access roads, powerhouse, and headrace tunnel. In parallel, protection works and the development of the powerhouse site camp were also carried forward.

49. **Table 2.9** summarizes the EPC contract and overall works progress achieved so far. **Table 2.10** exhibits component-wise progress achieved till the end of the reporting period against planned targets.

[1] For details, refer to para 16 and 37.

Table 2.9: Summary of Overall Works Progress till End of the Reporting Period

Contract Signing	SSEMP[2] Approval	Personnel		Civil Works[3]		Progress as of	
		Environmental Manager	Health and Safety Manager	Start	End	June 30, 2025	December 31, 2025
March 9, 2020	December 30, 2022	Irshad Saeed	Qi Xiu Feng	September 28, 2022	January 1, 2027	19.30%	25.69%

Table 2.10: Component-wise Summary of Works Progress till End of the Reporting Period

Description	Physical Progress in % up to December 31, 2025	Progress Variance %
Overall Progress	**25.69**	**52.63**
Basic Design	100.00	0.00
Detailed Design	52.47	30.47
Preparatory Works	95.6	4.40
Road and Bridge	73.01	8.14
Permanent Staff Residential Colony	55.77	44.23
Diversion Tunnel Works	84.65	15.35
Dam & Associated Works	6.35	63.93
Power Intake Works	45.00	55.00
Headrace Tunnel	30.02	56.83
Underground Main Access Tunnel, Ventilation & Cable Tunnel	20.88	58.81
Tailrace Tunnel & Downstream Surge Shaft	18.38	75.48
Upstream Surge Tank, Pressure Shaft & Penstocks	17.97	82.03
Powerhouse Works	4.40	95.60
Procurement, Production, Test & Transportation of E&M Equipment	0.00	87.09
Switchyard	0.00	100.00
Transmission Line Works	0.00	100.00
Main transformers and other equipment installation	0.00	42.97
Erection of Unit1,2,3	0.00	0.00
Completion &Taking-over	0.00	0.00

50. The EPC Contractor's manpower deployed at the site during the reporting period is in **Table 2.11**, followed by the staff deployment trend in the current reporting period in **Figure 2.8.** The comparison between the staff deployment trends in the current and previous reporting periods is exhibited in **Figure 2.10.**

[2] The SSEMP, approved by the Employer, contained requisite plans. The updated SSEMP was cleared by the ADB on July 23, 2025. The PMC issued NOC of the updated SSEMP to the EPC Contractor on July 24, 2025.
[3] The start and end dates of the civil works are those contained in the last approved Work Schedule.

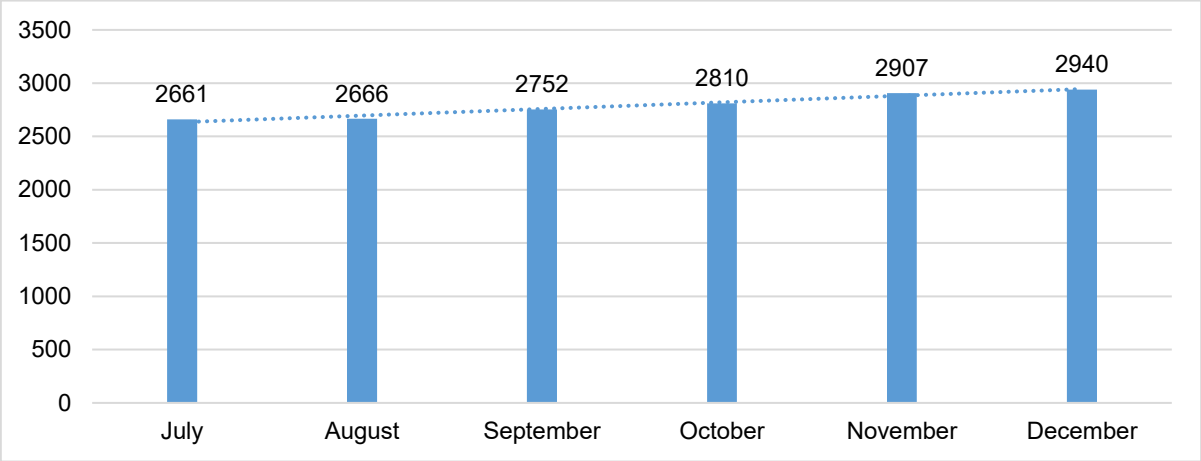
Table 2.11: Manpower Deployed to the Project during the Reporting Period

S/No	Designation of Staff	Reporting Months					
		July	Aug	Sep	Oct	Nov	Dec
1	Project Manager	1	1	1	1	1	1
2	Planning, Engineering &Technical Director (DPM)	2	2	2	2	2	2
3	QHSE Director (DPM)	1	1	1	1	1	1
4	Contract &Commercial Director (DPM)	1	1	1	1	1	1
5	Equipment and Material Director (DPM)	1	1	1	1	1	1
6	Deputy Director of Technical &Engineering	2	2	2	2	2	2
7	Deputy Director of Contract & Commercial	1	1	1	1	1	1
8	Deputy Director of Administrative	1	1	1	1	1	1
9	Environmental Manager	1	1	1	1	1	1
10	Contract & Commercial Management Department	11	11	11	11	11	11
11	Planning, Engineering Management	34	34	36	37	38	39
12	Design & Technical Management Department	32	32	34	34	35	37
13	QHSE Management Department	60	60	63	63	64	68
14	Equipment and Materials Department	24	24	24	24	24	25
15	Financial Management Department	11	11	11	11	11	11
16	Administration & Human Resources Department	63	63	66	66	68	70
17	Dam Site Managements	11	11	11	11	16	16
18	Powerhouse Managements	10	10	10	10	13	13
19	Survey Team	20	20	20	20	20	20
20	Laboratory Team	21	21	21	21	21	21
21	Diversion Tunnel & Dam Skilled& unskilled	531	531	541	541	551	560
22	Mechanical team Operators, Driver &Mechanic at Dam	146	146	154	160	162	164
23	Steel Yard Processing Team Dam	39	39	39	45	45	45
24	Batching Plant at Dam	46	46	55	55	57	59
25	Grouting team at the Dam	41	41	41	50	50	50
26	Mechanical team Operators, Driver &Mechanic at A2&A3	146	146	153	154	154	155
27	General Team Electricity, water supply, A2&A3 Dam	65	65	65	65	65	66
28	Batching Plant team A2	16	16	16	17	17	17
29	Adit2 Tunnel Skilled &Unskilled Labors	160	160	167	167	169	169
30	Adit 3 tunnel skilled &unskilled labors	107	107	107	111	116	116
31	Batching Plant team A3	25	25	25	25	25	25
32	Powerhouse retaining Wall Skilled &unskilled Labors	105	105	105	105	105	105
33	Main Access Tunnel Power House, Downstream Surge Tunnel	281	281	289	302	328	332

S/No	Designation of Staff	Reporting Months					
		July	Aug	Sep	Oct	Nov	Dec
34	Batching Plant Powerhouse Skilled and Unskilled	25	25	25	25	26	26
35	Operator, Driver &Mechanic at Powerhouse	107	107	118	134	165	169
36	General Team Electricity, water supply, at Upstream, Main Access Tunnel, Powerhouse	35	35	41	41	42	42
37	Upstream Surge Tunnel Skill and Unskilled Labor	106	105	115	115	120	120
38	Site Manager	1	1	1	1	1	1
39	Planning Engineer	4	4	4	4	4	4
40	Construction Manager	1	1	1	1	1	1
41	Admin Manager	2	2	2	2	2	2
42	Quantity Surveyor	1	1	1	1	1	1
43	Site Engineer	7	7	7	8	7	7
44	Chief Surveyor	2	2	2	2	2	2
45	Land Surveyor	4	4	4	4	4	4
46	Assistant Surveyor	1	1	1	1	1	1
47	Material Engineer	1	1	1	1	1	1
48	Senior Engineer Technical	1	1	1	1	1	1
49	Structure Engineer	1	1	1	1	1	1
50	Senior Planning Engineer	3	3	3	3	3	3
51	Senior Accountant	1	1	1	1	1	1
52	Lab technician	3	3	3	3	3	3
53	Electrical Engineer	1	1	1	1	1	1
54	Health & Safety	2	2	2	2	2	2
55	Geologist	6	6	6	6	6	6
56	Store Keepers	2	2	2	2	2	2
57	Quantity Surveyor	1	1	1	1	1	1
58	Mechanical Purchaser	1	1	1	1	1	1
59	Senior Engineer	1	1	1	1	1	1
60	Date Entry Operator	1	1	1	1	1	1
61	Finance Manager	1	1	1	1	1	1
62	Skilled Labor	182	188	188	188	188	188
63	Unskilled Labor	141	141	141	141	141	141
Total (No)		**2661**	**2666**	**2752**	**2810**	**2907**	**2940**
Out of Total, Local Employed Workforce (No)		**1122**	**1252**	**1597**	**1630**	**1724**	**1745**
Percentage of Local Employed Workforce		**42%**	**46%**	**58%**	**58%**	**59%**	**59%**

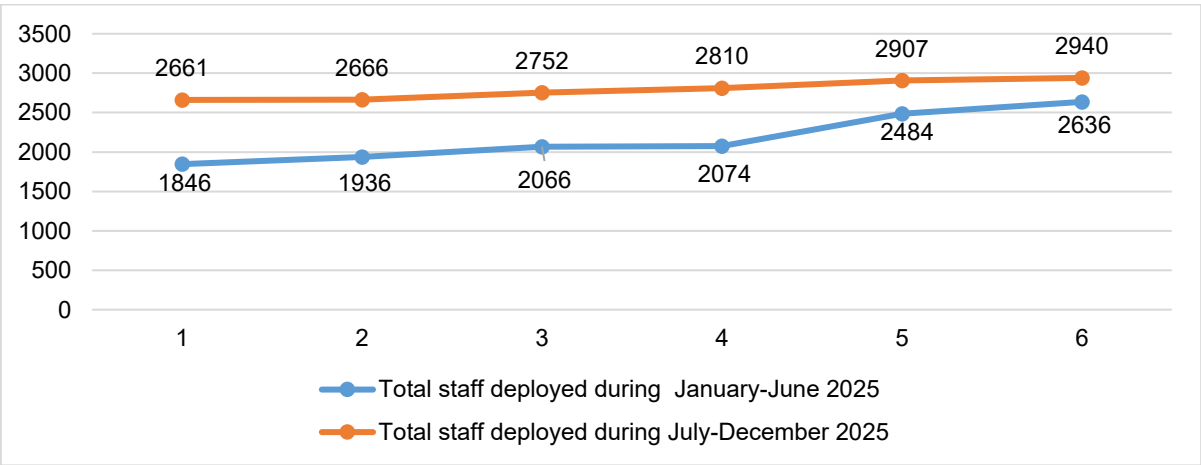
Source: Data provided by the EPC Contractor

Figure 2.8: Staff Deployment Trend during the Current Reporting Period



51. As shown in the figure above, there is a steady increase in the EPC Contractor's workforce. This growth reflects both an uptick in ongoing construction activities and the commencement of new activities at various sites, especially at the headrace tunnel, diversion tunnel, upstream inclined surge tunnel, dam, and powerhouse locations.

Figure 2.9: Comparison between the Staff Deployment Trends in the Current and Previous Reporting Periods.



52. When comparing workforce deployment trends during the July-December 2025 period, a gradual and consistent increase in total staff deployment is observed, rising from 2,661 in July to 2,940 in December 2025 **(Figure 2.9)**.

53. This increase reflects the steady expansion of construction activities across multiple work fronts. A corresponding rise in local employment is also evident, increasing from 1,122 in July to 1,745 in December 2025 **(Figure 2.10)** demonstrating continued engagement of local communities. The overall increase in workforce deployment during this period is primarily attributed to the intensification of underground works and sustained progress at major construction sites.

54. Statistics of locals employed by the EPC Contractor during the year 2025 are in **Figure 2.10** followed by a comparison of trends between the two reporting periods.

Figure 2.10: Local People Employed during the Year 2025

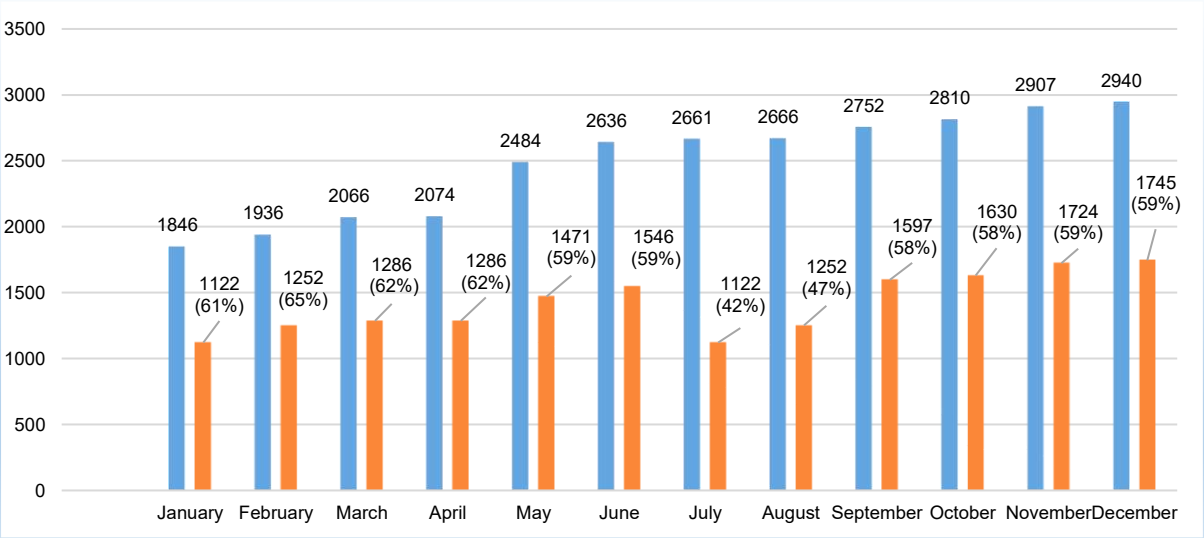
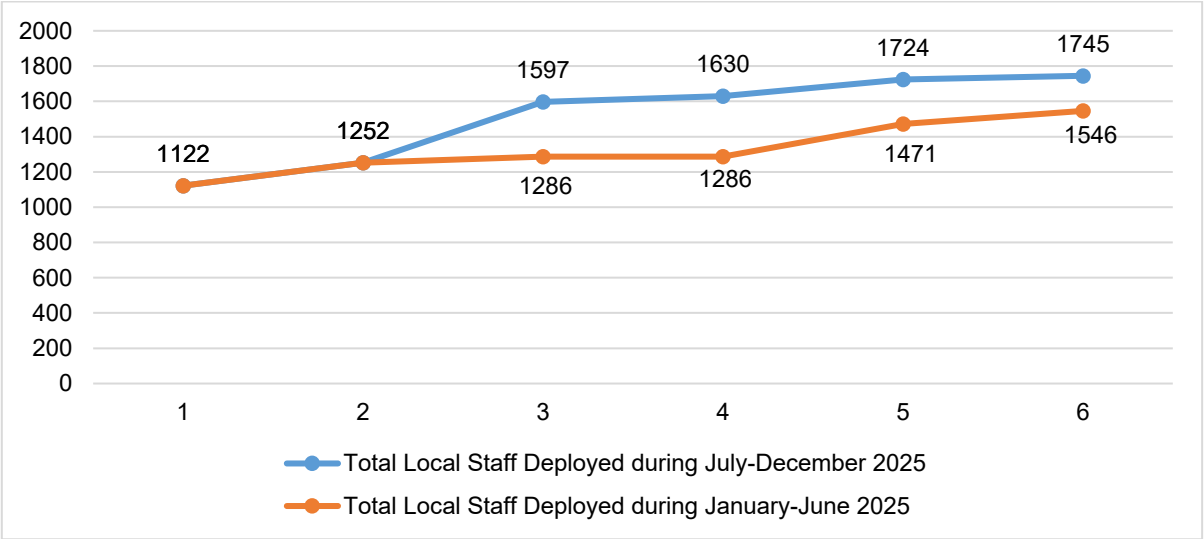


Figure 2.11: Comparison of Local Staff Deployed during the Current and Previous Reporting Periods



55. As evident from the presentation, there is a vivid increase in the local employment during the current reporting period.

56. **Table 2.12** exhibits the EPC Contractor machinery and major equipment deployed to the site. The heavy machinery was mainly deployed for underground earthwork activities and transporting materials, including concrete to the construction sites. Due to the initiation of construction activities at new sites, there is a significant increase in the EPC Contractor's equipment and construction machinery at the site.

Table 2.12: Machinery Deployed to Project during the Current Reporting Period

S/No	Machine	Model	Total No. Deployed	Deployment Month					
				Jul	Aug	Sep	Oct	Nov	Dec
1	Crawl Excavator	CDM 6225	1	1	1	1	1	1	1

S/No	Machine	Model	Total No. Deployed	Deployment Month					
				Jul	Aug	Sep	Oct	Nov	Dec
2	Excavator	Doosan 210,225	4	4	4	4	4	4	4
3	Dump truck		2	2	2	2	2	2	2
4	Pile boring machine		1	1	1	1	1	1	1
5	Generator		1	1	1	1	1	1	1
6	Transit Mixture		1	1	1	1	1	1	1
7	Crawler single bucket excavator	PC-200,335	2	2	2	2	2	2	2
8	Excavator	210,323&323	3	3	3	3	3	3	3
9	Automatic grouting recorder	GJY-VI	4	3	4	3	4	4	4
10	Geological drilling rigs	XY-2	3	3	3	3	3	3	3
11	Bolt grouting machine	EVMP	7	5	5	7	7	7	7
12	Grouting pumps	3SNS-A	2	2	2	2	2	2	2
13	Double-walled mixing drum	YJ-200A	2	2	2	2	2	2	2
14	Slurry storage barrels	YJ-1200	2	2	2	2	2	2	2
15	Down-the-hole drilling rigs	KSZ100	2	2	2	2	2	2	2
16	Diesel generators	KPG 275K VA L8	1	1	1	1	1	1	1
17	Loader	LW300FN	3	3	3	3	3	3	3
18	Dump truck	SX3255DR384R	2	2	2	2	2	2	2
19	Wheeled excavators	DOOSAN DX210W-9C	1	1	1	1	1	1	1
20	Hydraulic drilling rigs	FT35	1	1	1	1	1	1	1
21	Crawler bulldozer	SD22	1	1	1	1	1	1	1
22	Small Crane	806	1	1	1	1	1	1	1
23	Mobile crane	100ton/25 ton	2	2	2	2	2	2	2
24	Concrete Mixer Truck	ZZ5257GJBM3247C/LB2	1	1	1	1	1	1	1
25	Wheeled Excavator	DX210W-9C, W-90	2	2	2	2	2	2	2
26	Batching Plant	Dual host HZS90	1	1	1	1	1	1	1
27	Light Truck		1	1	1	1	1	1	1
28	Side dump loader	WA380-6	1	1	1	1	1	1	1
29	Single arm drill	Boomer K111	1	1	1	1	1	1	1
30	Crawler Excavator	PC200LC-8M0	1	1	1	1	1	1	1
31	Crawler Excavator	CAT 336GC	1	1	1	1	1	1	1
32	Crawler Excavator	PC300-8M0	1	1	1	1	1	1	1
33	Concrete Mixer truck	FYG5253GJBC	5	4	4	5	5	5	5
34	flatbed truck	DONGFENG 5T	1	1	1	1	1	1	1
35	Wet Spray Machine	CYP.90	2	2	2	2	2	2	2
36	Crawler Excavator	CAT336GC	1	1	1	1	1	1	1
37	Power Transformer	630KVA	1	1	1	1	1	1	1
38	Power Transformer	315KVA	1	1	1	1	1	1	1
39	Shotcrete Jambo	WHP38H	1	1	1	1	1	1	1
40	Concrete mixer truck	LZZ5BLNB7KD575218 6m3	2	2	2	2	2	2	2
41	Vibrating Roller	XS203JPD	1	1	1	1	1	1	1
42	Jeep		1	1	1	1	1	1	1
43	Crush Plant	Crush Plant	1	1	1	1	1	1	1

S/No	Machine	Model	Total No. Deployed	Deployment Month					
				Jul	Aug	Sep	Oct	Nov	Dec
44	Dumper Trucks	Dumper Trucks	5	4	5	5	5	5	5
45	Bulldozer	Bulldozer	1	1	1	1	1	1	1
46	Loading Loader	Loading Loader	1	1	1	1	1	1	1
47	Crane	Crane	1	1	1	1	1	1	1
48	Excavator	Excavator	1	1	1	1	1	1	1
49	Bullet proof	B6	2	2	2	2	2	2	2
50	Excavator	HITACHI 200	1	1	1	1	1	1	1
51	Excavator	Hyundai	1	1	1	1	1	1	1
52	Wheel Loader		2	2	2	2	2	2	2
53	Mini Dumper		2	2	2	2	2	2	2
54	Generator	65 KV 15 KV,250	3	3	3	3	3	3	3
55	Batching plant	0.5m3	1	1	1	1	1	1	1
56	Transit Mixer	Nissan, Hino	4	3	3	3	4	4	4
57	Compressor /12Bar		2	2	2	2	2	2	2
58	Trolley Crane		1	1	1	1	1	1	1
59	Skid Dumper		1	1	1	1	1	1	1
60	Water Bozer		1	1	1	1	1	1	1
61	Mobile Shotcrete Pump		1	1	1	1	1	1	1
62	Shotcrete Pump		2	2	2	2	2	2	2
63	Ventilation Fan		1	1	1	1	1	1	1
64	Power Generator	375KVA	1	1	1	1	1	1	1
65	Air Compressor		2	2	2	2	2	2	2
66	Skid Dumper		1	1	1	1	1	1	1
67	Water Bozer		1	1	1	1	1	1	1
68	Mobile Shotcrete Pump		1	1	1	1	1	1	1
69	Skid Dumper		1	1	1	1	1	1	1
70	Water Bozer		1	1	1	1	1	1	1
71	Frequency Inverter		1	1	1	1	1	1	1
72	Dump truck		3	3	3	3	3	3	3
73	Crush Plant		1	1	1	1	1	1	1
74	Excavator	Hitachi 200, Hitachi 220	2	2	2	2	2	2	2
75	Wheel Loader	LW500	1	1	1	1	1	1	1
76	Diesel generators	V550C2, HDG22	2	2	2	2	2	2	2
77	Concrete Mixture Machine		2	2	2	2	2	2	2
78	Flatbed truck	FG1JKPB	1	1	1	1	1	1	1
79	Air Compressors		2	2	2	2	2	2	2
80	Concrete Pump	HBT80.13.112RSD, HBT60.16.110SU	2	2	2	2	2	2	2
81	Power Transformer	500,800KV,100,1200KV&1250	5	5	5	5	5	5	5
82	Single Arm Rock Drilling Rig	D7	1	1	1	1	1	1	1
83	Binding Machine		1	1	1	1	1	1	1
84	Shaper	BC6063	2	2	2	2	2	2	2

S/No	Machine	Model	Total No. Deployed	Deployment Month					
				Jul	Aug	Sep	Oct	Nov	Dec
85	jib crane	BZD-2	1	1	1	1	1	1	1
86	oil storage tank	5170 Gallon 19500L	1	1	1	1	1	1	1
87	Dump truck Volvo		1	1	1	1	1	1	1
88	Pickup double cabin		1	1	1	1	1	1	1
89	Batching Plant	50m3/h	1	1	1	1	1	1	1
90	Ventilation Fan		1	1	1	1	1	1	1
91	Electric Air Compressor	XAMS850E	2	2	2	2	2	2	2
92	Transit Mixer Machine	ZZ1257N3641W	4	4	4	4	4	4	4
93	Wheel Excavator	Doosan DX210W	1	1	1	1	1	1	1
94	Wet Spray Trolley	TSR 2010	1	1	1	1	1	1	1
95	Wheel Loader	LW300FN	1	1	1	1	1	1	1
96	Robotic Arm Wet Spray Machine	Sika Alive 272	1	1	1	1	1	1	1
97	Screw Air Compressor	XAS 186	1	1	1	1	1	1	1
98	Large Axial Flow Fan	AVH140.90.4	1	1	1	1	1	1	1
99	Dynamo	V550C2	1	1	1	1	1	1	1
100	Dynamo	J110 kVA	1	1	1	1	1	1	1
101	Diesel generators	1106A-70TG1/UCI274F	1	1	1	1	1	1	1
102	Cantilever jib crane	SQ8SK3Q	1	1	1	1	1	1	1
103	Side dump loader	WA380-6	1	1	1	1	1	1	1
104	Power transformers	YBP-11/0.4-315	1	1	1	1	1	1	1
105	Transit Mixture	636, 625,6981,6982,6983,6942	6	5	5	6	6	6	6
106	Transit Mixture	69,416,952	2	2	2	2	2	2	2
107	Punching Machine	CCHJ70/50C	1	1	1	1	1	1	1
108	Concrete Mixer Truck	FYG5253GJBC	2	2	2	2	2	2	2
109	Concrete Mixer Truck	LZZ5BLNB3KD575216	1	1	1	1	1	1	1
110	Truck Crane	XCT8L4	1	1	1	1	1	1	1
111	Dump Trucks	SCHMAN	7	7	7	7	7	7	7
112	Excavator	CATN320D, Hyundai 210	2	2	2	2	2	2	2
113	Excavator	Komatsu 200,Komatsu 100	2	2	2	2	2	2	2
114	Side dump loader	WA380-6	1	1	1	1	1	1	1
115	Wheel Loader	LW500FN, LW300FN	3	3	3	3	3	3	3
116	Diesel generators	Perkins 121hp,1106A-70TG1	2	2	2	2	2	2	2
117	Water tank	SCS5160GSS	2	2	2	2	2	2	2
118	Diesel tank	Foton Daimler, M600	2	2	2	2	2	2	2
119	Water truck	DLQ5161GSSZ4	1	1	1	1	1	1	1
120	Concrete Mixture Machine		3	2	2	3	3	3	3
121	Road Roller	XS183JPD	1	1	1	1	1	1	1
122	Crawler Drilling Machine	T35	1	1	1	1	1	1	1
123	Diesel Air Compressor	XRHS666CD,XAHS750	2	2	2	2	2	2	2
124	Mobile truck crane 25-ton	QY25K5-I	1	1	1	1	1	1	1
125	jib crane	BZD-2	1	1	1	1	1	1	1

S/No	Machine	Model	Total No. Deployed	Deployment Month					
				Jul	Aug	Sep	Oct	Nov	Dec
126	Digital Underground Scale	SCS-60	1	1	1	1	1	1	1
127	low-voltage switch box	380V 1600A	1	1	1	1	1	1	1
128	low-voltage switch box	380V 2000A	1	1	1	1	1	1	1
129	low-voltage switch box	UAN111-354-111	1	1	1	1	1	1	1
130	Ordinary lathe	C6160C	1	1	1	1	1	1	1
131	Vertical lifting table milling machine	ZX7045	1	1	1	1	1	1	1
132	Shaper	BC6063	1	1	1	1	1	1	1
133	sewage pump	TS200-125-365	1	1	1	1	1	1	1
134	Lathe	CY6166B-3000	1	1	1	1	1	1	1
135	Shaper	B6065	1	1	1	1	1	1	1
136	Vertical lifting table milling machine	XQ6232W-B	1	1	1	1	1	1	1
137	Radial drilling machine	Z5140A	1	1	1	1	1	1	1
138	Single column press	YX41-100T	1	1	1	1	1	1	1
139	Other hydraulic presses (pipe crimping machines)	XM91-C1	1	1	1	1	1	1	1
140	Lathe		1	1	1	1	1	1	1
141	Lifter		1	1	1	1	1	1	1
142	Wet spray trolley	TSR2010	1	1	1	1	1	1	1
143	Robotic arm wet spray concrete pump	Sika aliva702+Aliva302.1	3	3	3	3	3	3	3
144	Dump truck	SX3255DR384R	5	5	5	5	5	5	5
145	Dynamo	CUPP640(S)	2	1	2	2	2	2	2
146	Electric air compressor	XAMS850E	8	6	7	7	8	8	8
147	screw compressor	XAS186	1	1	1	1	1	1	1
148	Axial Fan	2*AVH125.90.4.8	1	1	1	1	1	1	1
149	Three-arm Trolley	BOOMER XL3D	1	1	1	1	1	1	1
150	geological drilling rig	XY-2	1	1	1	1	1	1	1
151	Concrete Mixer truck		2	2	2	2	2	2	2
152	Van Type Transformer	500 KVA	1	1	1	1	1	1	1
153	Electric Air Compressor	20m3	1	1	1	1	1	1	1
154	mini truck	VIGO CHAMP GX TRD	2	2	2	2	2	2	2
155	power transformer	ETO800/11	1	1	1	1	1	1	1
156	low voltage switch box	380V 1000A	1	1	1	1	1	1	1
157	Ordinary lathe	C6140C	1	1	1	1	1	1	1
158	Forklift	CPSCD50	1	1	1	1	1	1	1
159	Power transformers	YBP-11/0.4-315	2	2	2	2	2	2	2
160	Batching Plant at A3		1	1	1	1	1	1	1
161	Shotcrete Jambo	WHP38H	1	1	1	1	1	1	1
162	Shotcrete Jambo		1	1	1	1	1	1	1
163	Crawler bulldozer	SD22	1	1	1	1	1	1	1
164	Excavator		1	1	1	1	1	1	1

S/No	Machine	Model	Total No. Deployed	Deployment Month					
				Jul	Aug	Sep	Oct	Nov	Dec
165	Loader	LW300FN	1	1	1	1	1	1	1
166	Shotcrete Jambo	WHP38H	1	1	1	1	1	1	1
167	Carter Excavator	CAT320	2	2	2	2	2	2	2
168	Batching Plant at Power House		1	1	1	1	1	1	1
169	Diesel generators	V550C2	3	3	3	3	3	3	3
170	bulldozer	SD22	3	3	3	3	3	3	3
171	Loader(689)	LW300FN	1	1	1	1	1	1	1
172	Concrete pump	HBT60.16.110SU	5	5	5	5	5	5	5
173	Robotic arm wet spraying machine	Sika aliva272+Aliva302.1	3	3	3	3	3	3	3
174	Vibrating Roller	SCA610D	3	3	3	3	3	3	3
175	Concrete mixer truck	FYG5253GJBC	6	4	5	5	6	6	6
176	Concrete mixer truck	LZZ5BLNBIKD575215	2	2	2	2	2	2	2
177	Concrete mixer truck	6m³	1	1	1	1	1	1	1
178	Dump Truck	SX3255DR384R	19	15	15	15	19	19	19
179	Electric air compressor	XAMS-466E	17	15	15	16	17	17	17
180	Mobile explosives storage	YKF-1-001	4	4	4	4	4	4	2
181	Power Transformer	630KVA	4	4	4	4	4	4	4
182	Concrete mixer truck	6m³	1	1	1	1	1	1	1
183	Mobile explosives storage	YKF-1-003	1	1	1	1	1	1	1
184	Power Transformer	630KVA	2	2	2	2	2	2	2
185	bulldozer	SD22	1	1	1	1	1	1	1
186	Concrete mixer truck	LZZ5BLNBIKD575215	2	2	2	2	2	2	2
187	Concrete mixer truck	6m³	1	1	1	1	1	1	1
188	Mobile explosives storage	YKF-1-003	1	1	1	1	1	1	1
189	Electric air compressor	Electric air compressor	2	2	2	2	2	2	2
190	Side dump loader	WA380-6	1	1	1	1	1	1	1
191	Wet spray truck	TSR2010	1	1	1	1	1	1	1
192	Tank Truck	HINO DUTRO WU720	1	1	1	1	1	1	1
193	Crawler Excavator	PC300-8M0	1	1	1	1	1	1	1
194	Crawler Excavator	PC300-8	1	0	0	1	1	1	
195	Loader	ZL50GN	1	1	1	1	1	1	1
196	Dump truck	SX3255DT384R	1	1	1	1	1	1	1
197	Loader	LW300FN	1	1	1	1	1	1	1
198	Electric Air Compressor	ATLAS 466E	2	2	2	2	2	2	2
199	Crawler Excavator	CAT320	1	1	1	1	1	1	1
200	Loader	CAT924K	2	2	2	2	2	2	2
201	Electric Air Compressor	XAMS850E	1	1	1	1	1	1	1
202	Loader	LW500FN	2	2	2	2	2	2	2
203	Power Transformer	800KVA	1	1	1	1	1	1	1
204	Crawler Excavator	CAT320	2	2	2	2	2	2	2

S/No	Machine	Model	Total No. Deployed	Deployment Month					
				Jul	Aug	Sep	Oct	Nov	Dec
205	Shotcrete Jambo	WHP38H	1	1	1	1	1	1	1
206	Large Axcel Flow Fan	2*AVH125.90.4.8	4	4	4	4	4	4	4
207	Large Axcel Flow Fan	1*AVH125.90.4.8	2	2	2	2	2	2	2
208	Concrete drag Pump	HBT60.16.110SU	2	2	2	2	2	2	2
209	Excavator	320	1	1	1	1	1	1	1
210	Loader	2L50CN, BS307	2	2	2	2	2	2	2
211	Roller		1	1	1	1	1	1	1
212	Dump truck	20t	10	8	7	7	10	10	10
213	Excavator	HITACHI 200	5	5	5	5	5	5	5
214	Crawl Excavator	HITACHI 200	4	4	4	4	4	4	4
215	Dump Truck	FAW 280	5	4	4	5	5	5	5
216	Roller		1	1	1	1	1	1	1
217	Excavator	Mobile Sunny/SAY155UU	1	1	1	1	1	1	1
218	Water Bozer		1	1	1	1	1	1	1
219	Shotcrete Pump Truck #14	Spritz Z1(A) Zoom line	1	1	1	1	1	1	1
220	Excavator	CAT, HYUNDAI	4	4	4	4	4	4	4
221	Excavator	Volvo 145, Sunny	5	4	4	4	5	5	5
222	Generator	65 KV 15 KV,250	3	3	3	3	3	3	3
223	Drilling Equipment		14	10	12	12	14	14	14
224	Peter Engine	25HP	2	2	2	2	2	2	2
225	Bulldozer		2	2	2	2	2	2	2
226	Dumper skid Fiori		1	1	1	1	1	1	1
227	Power Generator 200 KVA		1	1	1	1	1	1	1
228	Dumper	Mini Hino	1	1	1	1	1	1	1
229	Generator	Cat	1	1	1	1	1	1	1
230	Air Compressor		1	1	1	1	1	1	1
231	Tractor		1	1	1	1	1	1	1
232	Batching Plant	0.5m3	1	1	1	1	1	1	1
233	Transit Mixer		1	1	1	1	1	1	1
234	Weighing Bridge		1	1	1	1	1	1	1
235	Dumper		2	2	2	2	2	2	2
236	Loader	420	1	1	1	1	1	1	1
237	Hand mixing machine		1	1	1	1	1	1	1
238	Grader		1	1	1	1	1	1	1
239	Excavator		1	1	1	1	1	1	1
240	Crawl Excavators	PC200-8	1	1	1	1	1	1	1
241	Diesel generators	Perkins 121hp,1106A-70TG1	2	2	2	2	2	2	2
242	Dump truck		2	2	2	2	2	2	2

2.4. Material Resource Utilization

57. During the reporting period, several major construction materials were utilized in constructing permanent and temporary works. These materials include reinforced steel,

cement, sand, and coarse aggregates. All these materials were sourced from approved suppliers to ensure their quality and compliance with the Project standards. The EPC Contractor procured construction materials from the approved sources mentioned against each type of construction material.

i. Coarse aggregate: Black Diamond, Ghuman, and Bhangian Kasi
ii. Fine aggregate: Lawrencepur, Maira, and Thakot
iii. Cement: Askari, Fauji
iv. Reinforced steel: FF Steel, Amreli, Siraj, SJ, and Pak Steel

58. Water used for concrete production was supplied from the local water sources with prior written permission from the owner(s) of the source/users.

59. **Table 2.13** and **2.14** show month-wise and cumulative details of the materials used in the project construction activities, including those stored at the site. During the current reporting period, due to an increase in construction activities, there is a significant increase in the quantity of steel and aggregates as compared to the previous reporting period.

Table 2.13: Month-wise and Cumulative Details of Construction Materials

S/No	Month	Steel (Ton)	Cement (Bag)	Sand (cft)	Aggregates (cft)
1	July	551.439	5559.6	23921	238833.6
2	August	264.552	5605.07	179309	237606
3	September	332.362	4745.41	186778	212569
4	October	13.726	3860.32	117559	150749
5	November	361.717	4224.37	182121	171253
6	December	38.055	4242.67	182729	99666
Total for Reporting Period (July-December 2025)		1561.851	28237.44	872417	1110676.6
Total for Previous Reporting Period (January-June 2025)		1143.099	383784.25	1207945	1276965
Cumulative for the Project		4266.801	440259.13	2952779	3498318.2

Table 2.14: Month-wise and Cumulative Details of POL and Water Used (in litres)

S/No	Month	Diesel	Petrol	Water
1	July	233853	1278.85	3459300
2	August	302368	1602.49	3535116
3	September	278296	1611.42	3720704
4	October	339644	976.63	3945240
5	November	279802.6	1135.79	4232592
6	December	257625	1345.2	4127760
Total for Reporting Period (July-December 2025)		1691589	7950.38	23020712
Total for Previous Reporting Period (January-June 2025)		2106646	8072.03	16445682
Cumulative for the Project since Commencement of Works		5489823.6	23972.79	62487106

Glimpses of the Construction Activities

Right Abutment Excavation and Support Works

Excavation and Support Works Upstream Surge Tunnel

Construction of an upstream (U/S) Concrete Cofferdam

Fixing of the Frame Beam at the Left Abutment of the Dam

Overview of the Employer's Colony

Excavation and Support work at MAT

2.5. Description of Any Changes to the Project Design

60. There were no design changes in the reporting period.

2.6. Description of Any Changes to the Agreed Construction Methods

61. Since the approval of the basic engineering design on March 31, 2023, the EPC Contractor has been regularly submitting method statements for the PMC's review and approval. Although no changes have been proposed in the approved method statements so far, the approved changes will be reported in the corresponding SAEMR.

3. ENVIRONMENTAL SAFEGUARD ACTIVITIES

3.1. General Description of Environmental Safeguard Activities

62. During the reporting period, detailed engineering design activities—including planning for muck disposal areas—along with the review of the EPC Contractor's method statements and technical submissions, continued to progress. Construction works further advanced at major project components, including the dam, residential colony, access roads, powerhouse, and headrace tunnel. In parallel, protection works and the development of the powerhouse site camp were also carried forward. The HSE aspects of these activities were regularly monitored and supervised by the PMC and PIU staff. Also, during the reporting period, the PMC supervisory staff monitored quarterly instrumental environmental monitoring conducted by the KPEPA approved laboratory at the pre-identified locations at the site.

63. Following is a brief of the safeguard activities undertaken during the reporting period.

i. Regular fortnightly HSE progress review meetings among PIU, PMC, and EPC Contractor were held wherein HSE activities were prioritized, action plans were furnished, and targets were set for rectifying non-compliant activities observed during HSE supervision by the PMC/PIU supervisory staff. A copy of the minutes from one of such meetings is in **Appendix 1.**

ii. The PMC environmental team, along with the Geologist of the PIU, the Deputy Team Leader (DTL), and the PMC Geotechnical Expert, conducted site due diligence on July 31, 2025, on the spoil disposal area proposed for the dam site. The following were the major findings of the due diligence report.

   a. *Impact on the unacquired built-up property is anticipated.*
   b. *The exposed material, on the hill slopes proposed for dumping, appears to be overburden, which may not be able to withstand the load exerted by the dumping material. In other words, the surface geology is not promising for such an activity, warranting detailed geological investigations.*
   c. *Given the site's geological conditions, the EPC Contractor will incur additional costs and effort to construct stable, risk-mitigated protection structures.*
   d. *Being identified in direct contact with the reservoir, the failure of the protection works will have serious consequences for the reservoir, which include a drastic reduction in the capacity of the reservoir; impacts on the dam and plant operation; and impacts on the river ecology. Also, the dumped material will cause river pollution due to an increase in turbidity.*
   e. *In accordance with Clause 3 of the Khyber Pakhtunkhwa Rivers Protection Ordinance (2002), dumping spoil into the river or its tributaries is prohibited. Furthermore, since the proposed site's development would pose an ongoing risk to the project dam site, the environmental team did not recommend it for spoil disposal*

iii. In addition, on September 25, 2025, the Environmental Expert conducted due diligence on the spoil disposal area identified by the EPC Contractor for Adit-1 and headrace tunnel (HRT) and found the site suitable for spoil disposal. During the reporting period, identification of spoil disposal area for the dam site, the detailed design for the powerhouse, and A1 & HRT spoil disposal sites remained in progress.

iv. On August 07, 2025, the PMC's Environmental Expert delivered a presentation to the Fisheries and Wildlife departments of the Government of Khyber Pakhtunkhwa on the Project-specific BAP. The presentation was also attended by the Deputy Director Social and Environment of the PIU and the Director Social and Environment of PEDO. At the end of the presentation, the PIU requested both departments to prepare draft agreements for review, allowing them to initiate field activities as soon as possible. Consequently, in the last week of December 2025, both departments submitted draft contracts to the PIU for review, which remained in progress until the end of the reporting period.

v. On September 02, 2025, the PMC's Environmental Expert delivered a presentation on the health, safety, and environmental (HSE) portfolio of the project to the ADB and AIIB safeguard teams at the ADB office, Islamabad. During the presentation, the EE explained various milestones achieved and issues resolved during the period from January to July 2025, with an emphasis on the health and safety aspects of the construction activities. In the meeting, it was decided that the ADB and AIIB safeguard teams will visit the Site to physically audit the HSE compliance. Consequently, a joint site visit was carried out on September 04, 2025, wherein the team identified several concerns, including unsatisfactory living conditions at the EPC Contractor's powerhouse labour camp, insufficient air quality monitoring frequency inside the tunnels, inadequate safety signage along Access Road R-3, and delays in the finalization of approved spoil disposal sites by the EPC Contractor. The observations noted were shared with the EPC Contractor in the form of a Corrective Action Plan (CAP) for necessary rectification. Till end of the reporting period, the EPC Contractor had rectified most of the gaps, while the PMC issued instructions for rectification of the remaining gaps.

vi. On September 11, 2025, the External Environmental Monitor (EEM) visited the construction sites. The major gaps identified by the EEM include the delay in construction of sedimentation tanks, the non-provision of color-coded waste bins, and oil spills. The gaps identified by the EEM were shared with the EPC Contractor in the form of a CAP for necessary rectification. Out of the total 49 observations, 45 were complied during the reporting period. Those observations that were not fully complied till end of the reporting period are contained in **Table 8.2** with target dates for necessary rectification.

vii. On September 25, 2025, the ADB Country Director, together with a safeguard team, visited the Downstream Surge Shaft Tunnel to assess the causes of a serious occupational, health and safety accident that occurred on September 23, 2025.

viii. During the reporting period, on October 02, 2025, final assessment test and examination for the 18 trainees enrolled in the six-month vocational training program at the Government Skill Development Centre, Hassa Balakot, were conducted. The assessment covered both trades, namely Computer Operations and Electrician, marking the completion of the second training initiated in May 2025 for eligible candidates from Paras Village. The next training is scheduled in March 2026. A total of 10 vocational trainings will be imparted during the course of the contract.

ix. On October 07, 2025, the PEDO's Audit team conducted a detailed investigation meeting concerning the accident that occurred on September 23, 2025, which resulted in a hand amputation injury to a worker. The Audit team subsequently carried out a site visit on October 08, 2025, to assess site conditions related to the incident. The report from the audit team remained awaited till end of the reporting period.

x. During the third and fourth quarters of the reporting period, the EPC Contractor conducted instrumental environmental monitoring at the work sites and camps, including the newly constructed camp at the powerhouse site. A detailed description of the results obtained has been given in **Section 5.2**, while the signed scanned copies are in **Appendix 2** to the report.

xi. The ADB's consultants conducted labour and OHS audit at the Site from November 24 to 28, 2025. The audit assessed the implementation status of the EPC Contractor's OHS management system. The auditing team also held detailed meetings with the PIU, PMC, and the EPC Contractor, and thoroughly checked their records. The audit report remained awaited till end of the reporting period.

xii. During the reporting period, the EPC Contractor conducted several occupational health and safety (OHS) training sessions to enhance workplace safety culture and emergency preparedness. On November 14 and 15, 2025, a third-party safety training session was delivered by IntelloACE Trainers and Consultants for various trades. The first day focused on first aid and scaffolding safety at the dam site office, while the second day covered safe forklift operation and heavy machinery safety. Additionally, the Annual Occupational Health and Safety (OHS) Training was organized on December 16-17, 2025, at the project site in collaboration with Rescue 1122, District Mansehra. The training was participated in by the EPC Contractor's HSE officers, the PIU field staff, and the PMC HSE staff (attendance sheet of the participants is in **Appendix 6**). This training emphasized emergency response, first aid administration, fire extinguishing, and oil spill response. The first day consisted of classroom-based sessions on OHS awareness, hazard identification, risk prevention, and first aid, while the second day involved practical demonstrations, including first aid scenarios, firefighting drills, incident response, emergency evacuation, and rescue simulations at the crushing plant site. These training initiatives enhanced workers' awareness, improved emergency response capabilities, and positively contributed to strengthening the overall health and safety culture at the project site.

xiii. The onsite job trainings, toolbox talks, and various emergency drills were regularly held during the reporting period. These training initiatives enhanced workers' awareness, improved emergency response capabilities, and contributed positively to strengthening the overall health and safety culture at the project site.

xiv. During the reporting period, the PIU received two environment-related complaints from the project area community. Both the complaints were effectively resolved till end of the reporting period through the GRM in place. The Paras community complaint, received on October 13, 2025, was addressed and resolved by the EPC Contractor, while in the second complaint, received on November 12, 2025, the PMC conducted a detailed investigation. The report furnished to the effect of the investigation was shared by the PIU with the complainant and clarified to him that the complaint is not based on ground facts.

Glimpses of the HSE Safeguard Activities

Project-Specific BAP: Meeting with DG Fisheries Department (August 07, 2025)

Project-Specific BAP: Meeting with Chief Conservator Wildlife Department (August 07, 2025)

PMC and EPC Contractor meeting on the Major Accident (September 24, 2025)

Meeting with ABD and AIIB Safeguard Team at the ADB office, Islamabad (September 04, 2025)

Toolbox Talks

PMC and EPC Contractor meeting about the Non-Compliance highlighted during OHS Audit (December 02, 2025)

PMC and EPC Contractor joint visit to the Proposed Spoil Disposal Area for Dam (July 31, 2025)

Air and Noise Instrumental Monitoring near Sensitive Receptors at A2 Site (Third Quarter of 2025)

3.2. Site Audit

64. Error! Reference source not found. exhibits the site audits undertaken by the EEM, P IU, PMC, EPC Contractor's environmental staff, and the ADB and AIIB safeguard mission during the reporting period. Since the PMC's HSE team visits the site on an almost daily basis, their routine inspection and supervision visits are not reflected herein.

65. During these visits, HSE aspects of the construction activities at permanent access roads, the Employer's residential colony, camp facilities, batching plants, adit tunnels, headrace tunnel, and dam sites were audited. Also, the causes of the major and fatal incidents were investigated.

Table 3.1: Site Audit Conducted during the Reporting Period

Visit Date	Auditor		Purpose of Audit	Summary of Findings
	Title	Name		
July 31, 2025	**PIU:** Deputy Director Geology	Sharifuddin	Due diligence of the spoil disposal site identified for the Dam site.	• The proposed site partially lies within reservoir land, upper area consists of unstable hill slopes. • Dumped material and protection works may submerge, reducing reservoir capacity. • Potential impacts on flora and nearby unacquired structures. • Poor surface geology (overburden) requires detailed geotechnical investigation and higher stabilization effort. • Failure of protection works may affect reservoir capacity, dam/plant operation, and river ecology, and increase turbidity. • The proposed site is not suitable for the spoil dumping.
	PMC: i. Deputy Team Leader ii. Environmental Expert iii. Geotechnical Expert iv. Environmental Officer	i. Muhammad Hussain ii. Assad Ali Khan iii. Alican Aslan iv. Najum Us Saqib		
	EPC Contractor: i. Environmental Manager ii. Technical Engineer	i. Irshad Saeed ii. Muhammad Mueenam		
August 26, 2025	**PIU:** Deputy Director, HSE and Gender	Ibtesaam Zaima	HSE compliance audit of construction works at the site	• Waste was dumped near the portal area. • Diesel drums and chemical tanks stored without drip trays. • Required sedimentation tank not constructed • Inadequate PPE usage by workers, drivers, and heavy machinery operators. • First aid box not adequately stocked with essential medical supplies.
	PMC: i. H&S Monitor **ii.** Environmental Officer	i. Syed Ali Fawad Shah ii. Najum us Saqib		
	EPC Contractor: i. Environmental Manager ii. HSE Officer	i. Irshad Saeed ii. Ali Haider		

Visit Date	Auditor		Purpose of Audit	Summary of Findings
	Title	Name		
September 04, 2025	**ADB:** i. Environmental Specialist **AIIB:** ii. Environmental Specialist	i. Shazia Shahid ii. Mudassar Hassan	HSE site Audit	• Unsatisfactory living conditions at the powerhouse labor camp. • Deficient frequency of air quality monitoring inside tunnels. • Insufficient safety signage along Access Road R-3. • Delays in finalization of approved spoil disposal sites. • CAP shall be transmitted to the EPC Contractor for rectification.
	PIU: Deputy Director, HSE and Gender	Ibtesaam Zaima		
	PMC: i. Environmental Expert ii. H&S Monitor iii. Environmental Officer	i. Assad Ali Khan ii. Syed Ali Fawad Shah iii. Najum us Saqib		
	EPC Contractor: i. Environmental Manager ii. HSE officer iii. HSE Manager iv. Engineer	i. Irshad Saeed ii. Ali Haider iii. Fazal- Zuljalal iv. Usama		
September 11, 2025	**EEM:** EEM Auditor	Dr. Abdul Qayyum	HSE compliance audit of construction works at the site.	The main observations included the non-construction of waste stabilization ponds, the absence of color-coded waste bins at construction sites, and the identification of other non-compliances. The Corrective Action Plan shall be shared with the EPC Contractor for necessary rectification.
	PIU: Deputy Director, HSE and Gender	Ibtesam Zaima		
	PMC: i. Health and Safety Monitor ii. Environmental Officer	i. Syed Ali Fawad Shah ii. Najum us Saqib		
	EPC Contractor: i. Environmental Manager ii. HSE Officer	i. Irshad Saeed ii. Ali Haider		

Visit Date	Auditor		Purpose of Audit	Summary of Findings
	Title	Name		
September 25, 2025	**PMC:** Environmental Expert	Asad Ali Khan	Due diligence of the spoil disposal site identified for the Adit-1 HRT.	• Mismatch observed between spoil disposal site boundaries marked on the ground and those shown in the submitted proposal. • A residential house and an electric pole were located within the proposed boundaries on the submitted map. • Boundaries marked on the hill slopes (right side of Kewai Nullah) did not correspond with on-ground demarcation. • Clearly mark the proposed spoil disposal area boundaries on the ground and submit an updated map with accurate coordinates.
	EPC Contractor: i. Construction Manager ii. HSE Manager	i. Abid Khan ii. Fazal- Zuljalal		
October 08, 2025	**PIU:** i. Deputy Project Director ii. Director Environment & Social iii. Deputy Director, HSE and Gender iv. Assistant Director Environment & Social	i. Muhammad Asif Khan ii. Sitara Zaib iii. Ibtesam Zaima iv. Ayesha	HSE Site Audit and investigation into the major accident that occurred on September 23, 2025.	The auditors have not shared their report and findings till end of the reporting period.
	PMC: i. Deputy Team Leader ii. H&S Monitor iii. Environmental Officer	i. Muhammad Hussain ii. Syed Ali Fawad Shah iii. Najum-us-Saqib		
	EPC Contractor: i. Director QHSE ii. Environmental Manager iii. HSE officer	i. Wang Chaowei ii. Irshad Saeed iii. Ali Haider		

Visit Date	Auditor		Purpose of Audit	Summary of Findings
	Title	Name		
November 24-28, 2025	**ADB:** i. OHS Consultant ii. Labour Consultant	i. Muhammad Dawood ii. Adeel	Project OHS & Labour Audit	The auditor assessed the implementation status of the EPC Contractor's OHS management system and held meetings with the EPC Contractor, PMC, and PIU. The auditors' report remained awaited till the end of the reporting period.
	PIU: i. Deputy Director, HSE and Gender ii. Deputy Director, S&R	i. Ibtesam Zaima ii. Naveed Afsar		
	PMC: i. Deputy Team Leader ii. Health and Safety Monitor iii. Environmental Officer iv. Resettlement Assistant	i. Muhammad Hussain ii. Syed Ali Fawad Shah iii. Najum us Saqib iv. Ibadullah		
	EPC Contractor: i. Director QHSE ii. Environmental Manager iii. HSE officer iv. HSE Manager GRC	i. Wang Chaowei ii. Irshad Saeed iii. Ali Haider iv. Fazal- Zuljalal		

66. The CAPs shared with the EPC Contractor were mostly rectified till the end of the reporting period; however, those not fully rectified yet, the PMC issued instructions to the EPC Contractor for immediate compliance.

Glimpses of Site Audits

EEM Visit to the Main Access Tunnel Powerhouse and Employer Colony Site on September 11, 2025

ADB and AIIB Safeguard Team Visit to the Main Access Tunnel Powerhouse and Diversion Tunnel Dam site on September 04, 2025

ADB Safeguard team visit to the Site (September 25, 2025)

OHS Auditor Checking Record at Site (November 2025)

3.3. Issues Tracking Based on Non-conformance Notices

67. As reported in the previous SAEMR for the period from January to June 2025, out of 76 minor non-compliances, four (4) remained open at the end of that reporting period. However, during the current reporting period, all of these issues were successfully resolved. The resolved non-compliances included the use of surgical masks instead of approved respirators/N95 masks by shotcrete workers and operators, electrical cables connected to sockets without proper plugs, and scrap material scattered along the walkway at the batching plant. The PMC's Health and Safety Monitor continues to closely monitor site activities, particularly with respect to PPE compliance, to ensure sustained adherence to safety requirements

68. The minor non-compliances recorded during the current reporting period include the following.

- The electrical cable was trailing on the ground without protection or double insulation.
- The water supply metallic pipes were kept without a rolling stopper or barrier.
- Poor or bad light in the tunnel where electrical cables and hoses were trailing on the wet surface.
- Oil Stains were found in different locations of the site.
- The confined space attendance log sheet was not maintained properly.
- A white coat was not provided to the doctor, or the doctor was found without a white coat.
- Housekeeping of the camp office was poor.
- The excavator was working without a banksman.
- Blasting cables and other material were lying on the wet surface.
- Workers were performing grinding without wearing face shields to protect by the generated flying debris and sparks.
- The workshop area was found in an unsatisfactory condition due to poor housekeeping.
- The quality of the raincoat provided was found to be below the required standard.
- Insufficient signage and hard barricading on the access roads.

69. Major non-compliances recorded during the current reporting period include: (i) Insufficient provision of communication equipment (walkie-talkies) was observed in the tunnels; (ii) workers were not provided with standard-compliant safety harnesses; (iii) non-standard working platforms and their access ladders were observed that were intended to be installed; and (iv) unauthorized dumping of spoil in Nullahs and the Kunhar River.

70. **Table 3.2** exhibits the status of major issues surfaced during the current reporting period.

Table 3.2: Tracking of Non-Compliances for the Current and Previous Reporting Periods

Issue	Reporting Period		Remarks
	January-June 2025	July-December 2025	
Number of open issues	4	3	
Number of closed issues	72	77	

Issue	Reporting Period		Remarks
	January-June 2025	July-December 2025	
Total number of non-compliances	76	80	
Total number of major non-compliances	4	4	Out of the four major non-compliances, the issue of: i. The EPC Contractor provided walkie-talkies to one Pakistani foreman and one Chinese foreman; however, walkie-talkies will also be provided to all remaining relevant personnel. ii. The EPC Contractor has initiated the provision of standard-compliant safety harnesses to the workers. iii. The EPC Contractor has installed a standard-compliant ladder in the pilot tunnel and will extend installation to all other sites. iv. The EPC Contractor has stopped the unauthorized dumping of spoil.
Percentage of issues closed	95%	96%	

71. **Table 3.2** shows that out of 80 non-compliances observed, 77 (96%) were resolved till the end of the reporting period, while rectification of the remaining non-compliances is in progress. The areas identified for further improvement during the reporting period include strengthening the root cause analysis process to ensure that incidents and non-conformities are thoroughly investigated and that effective preventive measures are systematically implemented. In addition, further enhancement of emergency preparedness is required through regular emergency drills, including evacuation and rescue scenarios, to build the response capacity of site personnel and improve coordination among emergency response teams.

3.4. Trends

72. As is evident from **Table 3.2,** the number of non-compliances recorded during the current reporting period is higher than that of the previous period. This increase is primarily attributable to the expansion of work fronts and engagement of additional workers compared to the previous reporting period.

3.5. Unanticipated Environmental Impacts or Risks

73. No unanticipated environmental impacts or risks were observed during the reporting period.

4. STATUS OF COMPLIANCE WITH COVENANTS

74. **Table 4.1** exhibits the compliance status of the environmental safeguards-related covenants in the Project Agreement signed on May 21, 2021, between ADB and the KP government.

Table 4.1: Compliance Status with Environmental Covenants[4]

Covenant	Reference in Project Agreement	Compliance Status
Procurement. PEDO shall not award any Works contracts which involves environmental impacts until: (a) Khyber Pakhtunkhwa Environmental Protection Agency (KPEPA)_has granted the final approval of the EIA; and (b) the Borrower has, or has ensured that PEDO has, incorporated the relevant provisions from the EMP and BAP into the Works contract.	Para. 3, page 8	**Complied** (a) KPEPA granted "Environmental Approval" to the project EIA report on July 6, 2021. (b) The EHS safeguards-related provisions have mainly been incorporated in (i) Volume-01 of 07 (Appendix-9), and (ii) Volume-03 of 07 (GCC and SCC) of the EPC Contract.
Environment. Khyber Pakhtunkhwa and PEDO shall ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Borrower and Khyber Pakhtunkhwa relating to environment, health and safety; (b) the Environmental Safeguards; and (c) all measures and requirements set forth in the EIA, the EMP, the BAP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	Para. 5, page 9	**Compliance in progress** (a) KPKEPA granted "Environmental Approval" to the project EIA report on July 6, 2021. Requisite NOCs, from the Forest, Fisheries, Wildlife, and Mining & Mineral departments of the government of KP, were obtained. (b) SSEMP, based on the EMP, site data, and the project requirement, was approved by the Employer on December 30, 2022. In the last week of December 2024, after the EPC Contractor had finalized the locations for camps, batching plants, access roads, sedimentation tanks, and magazines, and had obtained approval for two muck disposal sites, the EPC Contractor updated the SSEMP, which the PIU submitted to the ADB on March 23, 2025. The ADB review comments were subsequently incorporated, and the revised version was shared with the PIU on June 4, 2025, for review and further transmission to the ADB. The ADB safeguard team conveyed its concurrence to the updated SSEMP on July 23, 2025; to this effect, the PMC issued NOC to the EPC Contractor on July 24, 2025. (c) Consequent upon incorporation of the review comments, the ADB safeguard team cleared the updated EIA report of the Balakot HPP (300 MW) on May 06, 2025, which was subsequently disclosed on May 23, 2025.
Human and Financial Resources to Implement Safeguards Requirements Khyber Pakhtunkhwa and PEDO shall make available necessary budgetary and human	Para. 9 page 10	**Complied.** The requisite human and financial resources are available with the PIU, PMC, and EPC Contractor.

[4] Project Agreement for Loan 4057-Pak: Balakot Hydropower Development Project (https://www.adb.org/sites/default/files/project-documents/49055/49055-007-pra-en.pdf)

Covenant	Reference in Project Agreement	Compliance Status
resources to fully implement the EMP, the BAP and the RP.		The EO supervises the environmental field activities on a daily basis and provides support to the EE. For BAP implementation, a budgetary provision exists in Project PC-1, whereas for the EMP implementation, the EPC Contractor has allocated a lump sum amount in his bid. This allocation is also reflected in the EPC Contract, where it has been segregated across various milestones.
Safeguards – Related Provisions in Bidding Documents and Works Contracts. PEDO shall ensure that all bidding documents and contracts for Works contain provisions that require contractors to: (a) comply with the measures relevant to the contractor set forth in the EIA, the EMP, the BAP and the RP (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set forth in a Safeguards Monitoring Report; (b) make available a budget for all such environmental and social measures; (c) provide the Borrower, Khyber Pakhtunkhwa and PEDO with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the EIA, the BAP, EMP and the RP; (d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and (e) reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.	Para. 10, page 10	**Compliance in progress** The EHS safeguards-related provisions have mainly been incorporated in (i) Volume-01 of 07 (Appendix-9), and (ii) Volume-03 of 07 (GCC and SCC) of the EPC Contract. (a) Implementation of the SSEMP provisions is in progress at the site for the protection of the environment, health, and safety of the construction crew, community, etc. (b) Budgetary provision exists in the EPC Contract for implementation of HSE-related mitigation/preventive measures proposed in the SSEMP, EMP, BAP, or those identified in periodic safeguards monitoring reports. (c) So far, no unanticipated risk(s) have been identified, but provisions of the covenant, SSEMP, and conditions of the contract will strictly be followed if any unforeseen risk is identified. (d) Construction activities were mostly undertaken within the permanently acquired land. Under the EPC Contract provisions, any damage to the private/public property or utilities due to the EPC Contractor's works will be reinstated/compensated at the EPC Contractor's cost. Nevertheless, the covenant will be taken care of before initiating permanent works at the site. (e) The temporary land acquired by the EPC Contractor for his facilities will be reinstated under the conditions of the temporary lease contract(s), and in full compliance with the requirements of the EPC Contract. In this regard, copies of the lease agreements have been made part of the SSEMP.
Safeguards Monitoring and Reporting PEDO shall: (a) submit semi-annual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission; (b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the EIA, the EMP, the BAP and the RP, promptly inform ADB of the occurrence of	Para. 11, pages 10 and 11	**Compliance in progress.** (a) This is the ninth SAEMR furnished in compliance with the mentioned loan covenant. The previous seven reports were disclosed on the ADB website. (b) Till the reporting period, no unanticipated environmental risks have been identified. (c) EEM has been onboard since September 2022, whose external environmental monitoring report for the previous reporting period remained under the ADB review till the end of the reporting period.

Covenant	Reference in Project Agreement	Compliance Status
such risks or impacts, with detailed description of the event and proposed corrective action plan; (c) no later than the commencement of works by the Works contractor, engage qualified and experienced external experts under a selection process and terms of reference acceptable to ADB, to verify information produced through the Project monitoring process, and facilitate the carrying out of any verification activities by such external experts; (d) no later than the commencement of works by the Works contractor, engage external experts to monitor and report upon Project implementation, and facilitate the carrying out of any monitoring activities by such external experts; and (e) report any actual or potential breach of compliance with the measures and requirements set forth in the EMP, the BAP or the RP promptly after becoming aware of the breach.		(d) External experts specified in the PAM are on board in compliance with the covenant provisions. (e) No breach of compliance has occurred so far.
Prohibited List of Investments Khyber Pakhtunkhwa and PEDO to ensure, that no proceeds of the Loan are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of the Safeguard Policy Statement.	Para. 12, page 11	**Complied.** Loan proceeds are solely being used for developing the Balakot HPP (300 MW).
Grievance Redress Mechanism Khyber Pakhtunkhwa and PEDO shall ensure that a joint safeguards grievance redress mechanism acceptable to ADB is established and functional in accordance with the provisions of the EIA, the EMP, the BAP and the RP no later than the date of award of the Works contract to consider safeguards complaints. The safeguards grievance redress mechanism referred to in paragraph 13 above will function to: (a) review and document eligible complaints of project stakeholders; (b) proactively address grievances; (c) provide the complainants with notice of the chosen mechanism and/or action; and (d) prepare and make available to ADB upon request periodic reports to summarize (i) the number of complaints received and resolved, (ii) chosen actions, and (iii) final outcomes of the grievances.	Paras. 13 and 14, page 11	**Complied** PEDO has notified the Grievance Redress Mechanism (GRM) contained in the approved EIA for the Balakot HPP (300 MW), which is operational since September 2022. The EPC Contractor's internal GRM has also been notified and is operational since the commencement of works. The notified GRM is effectively performing the intended functions.
Labor Standards, Health and Safety Khyber Pakhtunkhwa and PEDO shall ensure that the core labor standards and the Borrower's applicable laws and regulations are complied with during Project	Para. 15, page 11	**Compliance in progress.** Provisions from the law of the land dealing with labor have appropriately been made part of the EIA report and EPC Contract.

Covenant	Reference in Project Agreement	Compliance Status
implementation. Khyber Pakhtunkhwa and PEDO shall include specific provisions in the bidding documents and contracts financed by ADB under the Project requiring that the contractors, among other things: (a) comply with the Borrower's applicable labor law and regulations and incorporate applicable workplace occupational safety norms; (b) do not use child labor; (c) do not discriminate workers in respect of employment and occupation; (d) do not use forced labor; (e) allow freedom of association and effectively recognize the right to collective bargaining; and (f) disseminate, or engage appropriate service providers to disseminate, information on the risks of sexually transmitted diseases, including HIV/AIDS, to the employees of contractors engaged under the Project and to members of the local communities surrounding the project area, particularly women.		

5. RESULTS OF ENVIRONMENTAL MONITORING

5.1. Overview of Monitoring Conducted during the Current Period

75. The prime objectives of environmental monitoring are to:
   i monitor project impacts on physical, biological, and socio-economic indicators, and assess the adequacy of the EMP/SSEMP in identifying and mitigating the project's adverse impacts;
   ii recommend mitigation measures for any unforeseen impact, or where the impact level exceeds those anticipated in EMP/SSEMP; and
   iii ensure legal compliance, including the safety of the workforce and community.

76. During the project execution, two types of monitoring activities were undertaken.
   i **Compliance Monitoring:** To ensure that mitigation/preventive measures proposed in EMP/SSEMP are adhered to; and
   ii **Effect Monitoring:** To monitor the effect of construction activities on various components of the environment, such as air, water, noise, soil, etc.

77. Compliance with the specifications and implementation of the mitigation measures proposed in the EMP/SSEMP was regularly supervised by the PMC. Effect monitoring, which includes air pollution, noise level, water, and soil analysis, was carried out by the EPC Contractor through third-party services. It should be noted that the PMC not only supervises the third-party laboratory's field activities but also regularly reviews its instrumental environmental monitoring reports.

78. The instrumental environmental monitoring carried out during the reporting period is detailed in the succeeding paragraphs.

5.2. Instrumental Environmental Monitoring

79. The quarterly instrumental environmental monitoring under the Balakot HPP (300 MW) was carried out by the KPEPA-certified laboratory, namely the Integrated Environment Laboratory (IEL) at the locations pinpointed in the SSEMP. The third quarter monitoring was conducted in September 2025, while the fourth quarter monitoring was undertaken in December 2025.

80. The IEL conducted quarterly instrumental environmental monitoring for air quality, noise level, water quality, and soil analysis at the locations pinpointed in the SSEMP, where baseline instrumental monitoring was done in December 2022, and at locations near sensitive receptors at the A3 Adit site. Also, samples of drinking water used by the EPC Contractor's workforce on-site, as well as from the Contractor's main camp in Paras village and powerhouse site camp, were also collected and analysed at the IEL laboratory. The analysis encompassed physical, chemical, and biological parameters.

81. The instrumental environmental monitoring points and the monitoring plan are in **Figure 5.1** and **Table 5.1** respectively.

Figure 5.1: Instrumental Monitoring Points

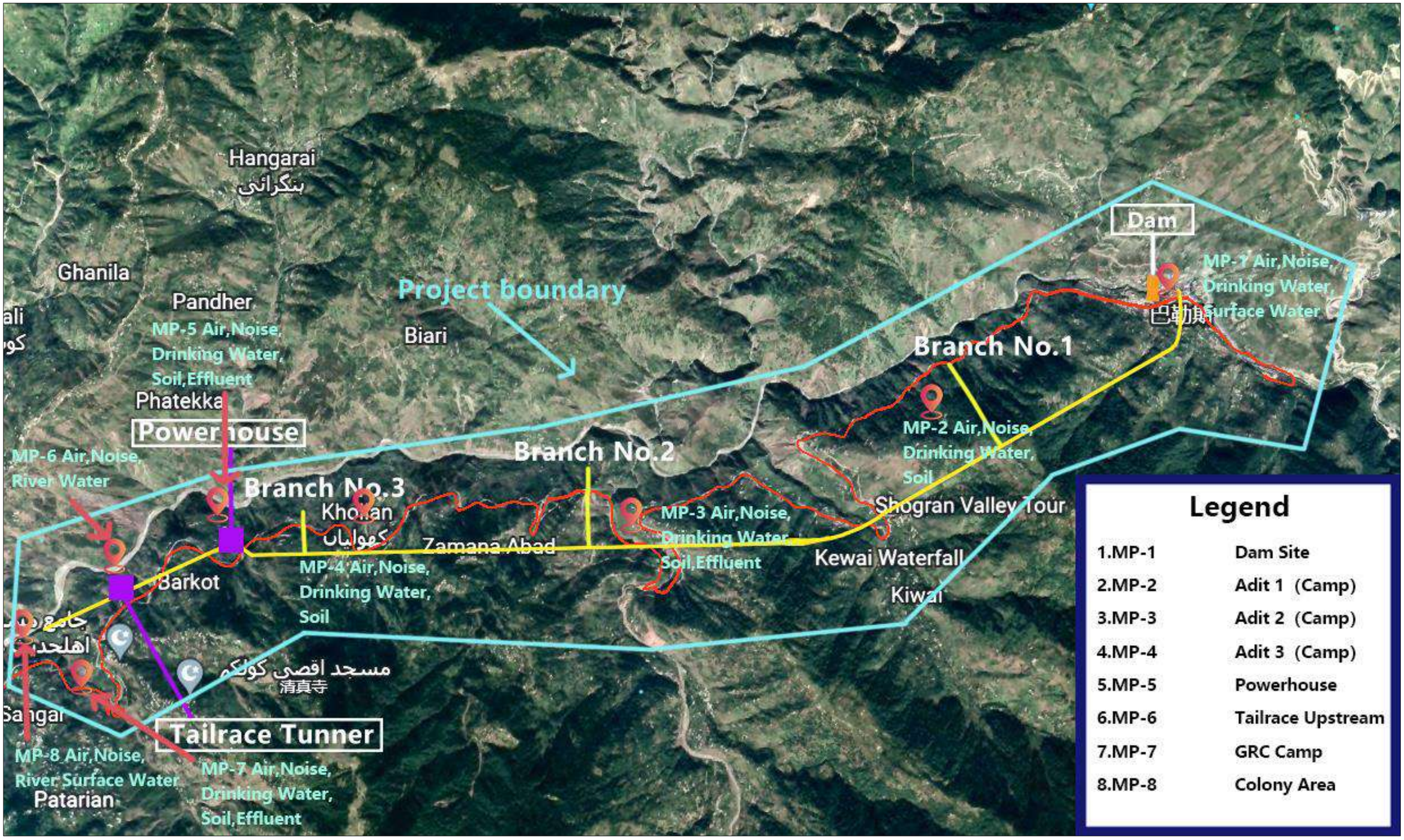


Table 5.1: Instrumental Environmental Monitoring Plan

Environmental Quality	Parameters	Standards/ Guidelines	Location	Monitoring Period/Frequency/ Sampling No/Year	Responsibility	
					Implementation	Monitoring
Pre-Construction Phase						
Air quality, noise level, water quality (drinking, and surface water of the Kunhar River), soil and effluent	The same as given for the construction phase	The same as given for the construction phase	Same as shown on the map	Once	EPC Contractor	PIU and PMC
Construction Phase						
Air quality	SO_2, NOx, CO, O_3, SPM, PM_{10}, $PM_{2.5}$, humidity, wind direction, wind speed, temperature etc.	Air quality standards by NEQS, WHO	Same as shown on the map	Quarterly (24-hour Duration)	EPC Contractor	PIU and PMC
Dust	Dust control	Air quality standards by NEQS, WHO		Quarterly (24-hour duration)	EPC Contractor	PIU and PMC
Noise level	dB(A)	Noise pollution control NEQS, WHO		Quarterly (24-hour duration)	EPC Contractor	PIU and PMC
Water quality	Surface water, temperature, turbidity, pH, TDS, EC, TSS, DO, COD, BOD_5	Water quality standards by NEQS, WHO		Quarterly	EPC Contractor	PIU and PMC
	Groundwater: color, odor, taste, temperature, turbidity, pH, TDS, EC, TSS, $CaCO_3$, Hardness, potassium, nitrate, nitrite (as NO_2), phosphate, arsenic, COD, DO, TSS, total *coil form*, *fecal coliform* and *e. coli*	Water quality standard by NEQS, WHO		Quarterly	EPC Contractor	PIU and PMC
Soil pollution	Soil texture, pH, EC, available phosphorus and SAR.	NEQS, Government of Pakistan		Twice a year	EPC Contractor	PIU and PMC

82. Comparison of the two quarters' instrumental environmental monitoring results with the baseline results, and NEQS, WHO, International Finance Corporation, and United States Environmental Protection Agency standard values (where applicable) is briefly given hereunder. The signed copies of the results are in **Appendix 2**.

5.3. Monitoring of Air, Noise, Water, and Soil analysis

5.3.1. Ambient Air Monitoring

a. Particulate Matter Monitoring

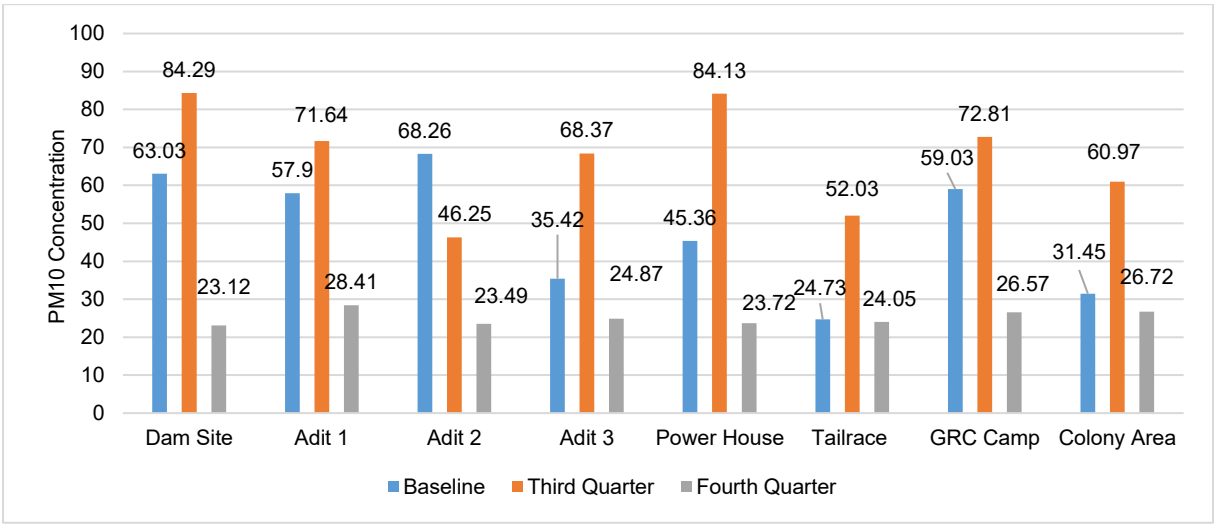
83. **Methodology and instruments used.** Ambient particulate matter (PM) monitoring was carried out to assess PM_{10} and $PM_{2.5}$ concentrations at the pre-identified locations within the Project reach. The Air Quality Monitoring System (AQMS-65) employed for PM_{10} and $PM_{2.5}$ is a fully integrated air monitoring station that delivers 'near reference levels' of performance parameters. With the size of a large suitcase, it can measure up to 20 different gases, particulate pollutants, and environmental parameters simultaneously. The AQMS-65 offers an optimal balance between performance and measuring criteria pollutants.

84. **Comparison of results.** Ambient PM_{10} and $PM_{2.5}$ were monitored for 24 hours at the pre-identified locations, as in **Figure 5.1**. **Figure 5.2** exhibits the intended comparison.

85. The monitoring results of PM_{10} concentrations during the third and fourth quarters indicate a clear improvement in air quality from the third to the fourth quarter across most monitored locations. During the third quarter, elevated PM_{10} levels were observed at several sites, particularly at the dam, powerhouse, GRC Camp, and Adit 3 sites, reflecting intensified construction activities. Although PM_{10} concentrations during this period remained within NEQS limits, multiple locations exceeded the WHO guideline values, indicating short-term construction-related impacts.

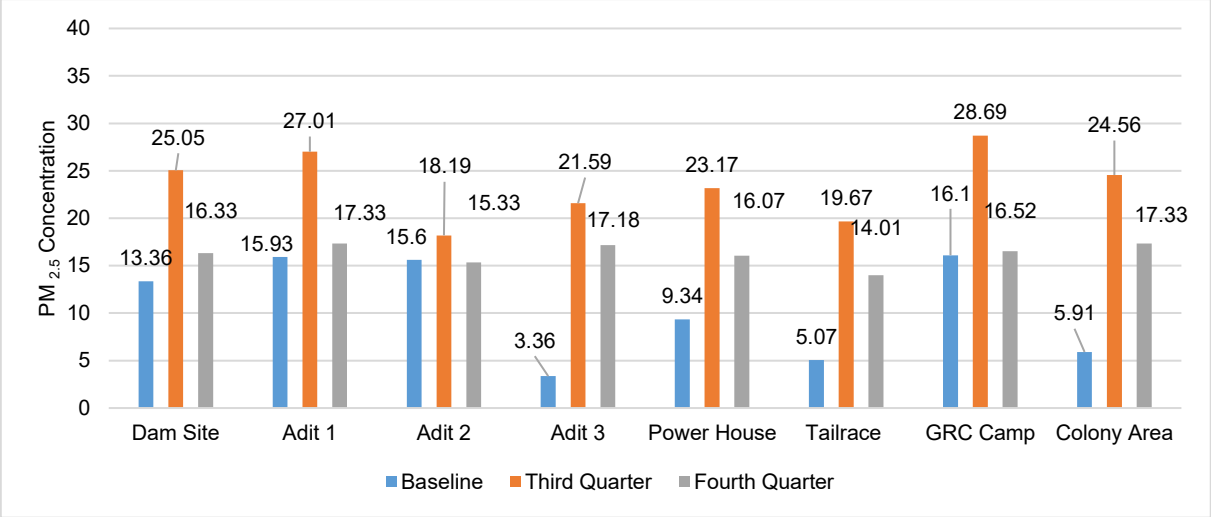
86. In the fourth quarter, a consistent reduction in PM_{10} concentrations was recorded across all monitoring sites. This improvement is attributed to the implementation of enhanced dust control measures, improved housekeeping practices, and partial completion or stabilization of construction activities. PM_{10} levels during the fourth quarter remained within NEQS and showed closer compliance with WHO guideline values as compared to the third quarter.

Figure 5.2: Particulate Matter (PM_{10}) µg/m³ Concentrations in Quarter 3rd and Quarter 4th , 2025



NEQS: 150 µg/m³, WHO: 45 µg/m³

Figure 5.3: Particulate Matter ($PM_{2.5}$) µg/m³ Concentrations in Quarter 3rd and Quarter 4th , 2025



NEQS: 35 µg/m³, WHO: 15 µg/m³

87. The $PM_{2.5}$ monitoring results for the third and fourth quarters show a clear variation in air quality trends across the monitored sites. During the third quarter, elevated $PM_{2.5}$ concentrations were observed at several locations, particularly at Adit 1, GRC Camp, colony area, and the dam site, where levels exceeded the WHO guideline values while remaining within the NEQS, reflecting increased construction activity. In contrast, the fourth quarter results indicate a general reduction in $PM_{2.5}$ concentrations across all sites, demonstrating improved air quality management.

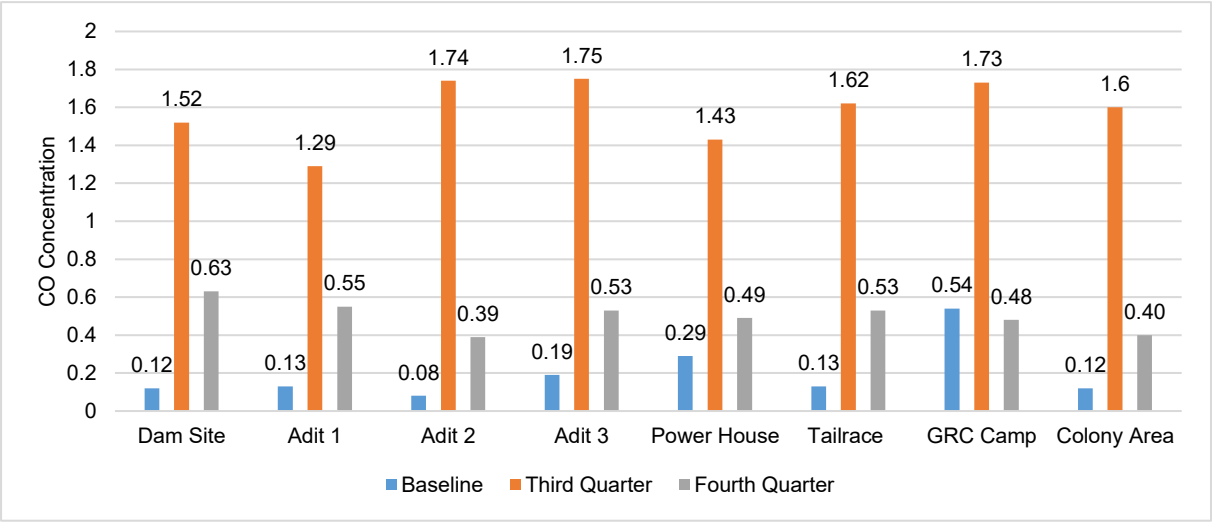
88. As shown in **Figure 5.3,** the fourth quarter results indicate better air quality control compared to the third quarter, while continued mitigation measures remain necessary to further reduce $PM_{2.5}$ levels.

b. Gas Monitoring

89. **Methodology and instruments used.** The ambient gas monitoring was carried out by assessing carbon monoxide (CO), sulfur dioxide (SO_2), and nitrogen oxides (NO_x) at the pre-determined locations. AQMS-65 was also employed for monitoring.

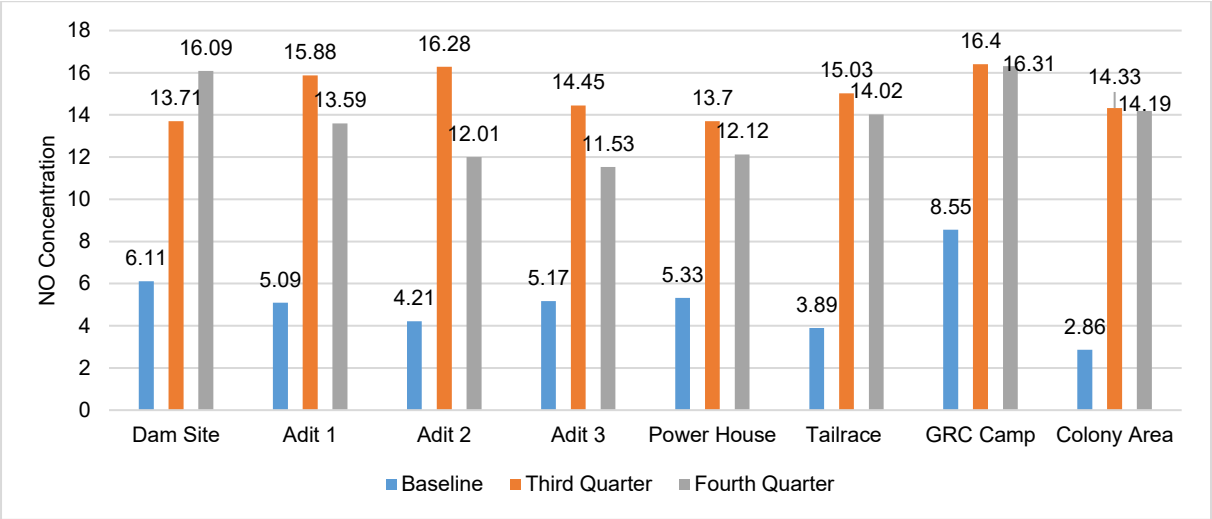
90. **Comparison of results.** The 24-hour ambient gas monitoring for the foregoing gases was carried out during the third and fourth quarters of 2025 at the pre-identified locations in the project area. A comparison of the results obtained is exhibited in **Figure 5.4** to **Figure 5.7**.

Figure 5.4: Carbon Monoxide (CO) (mg/m^3) Concentrations in Quarter 3rd and Quarter 4th , 2025



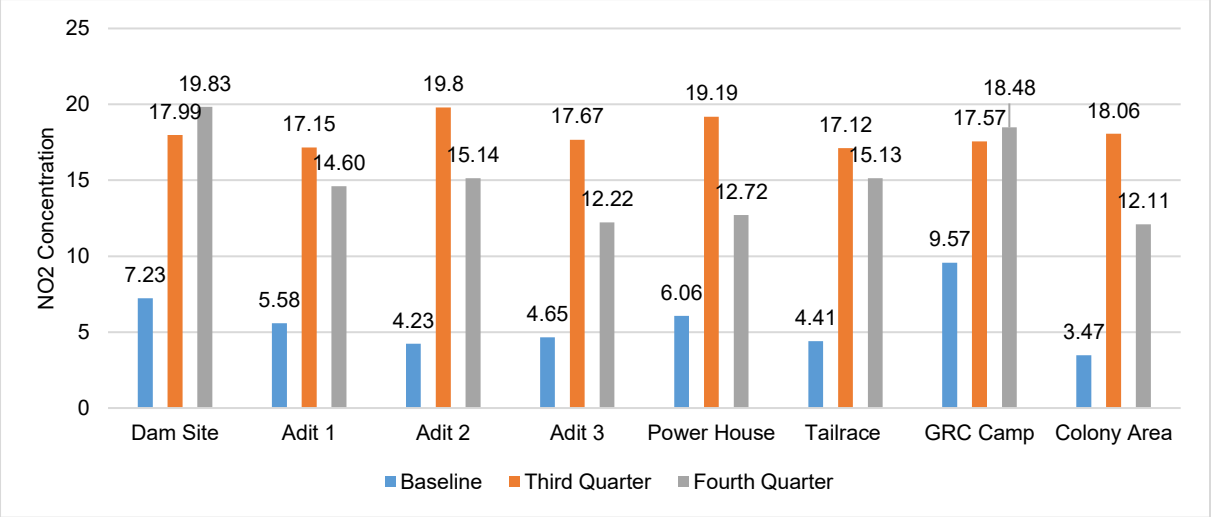
NEQS: 5 mg/m^3, WHO: 4 mg/m^3

Figure 5.5: Nitrogen Oxide (NO) (mg/m^3) Concentrations in Quarter 3rd and Quarter 4th , 2025



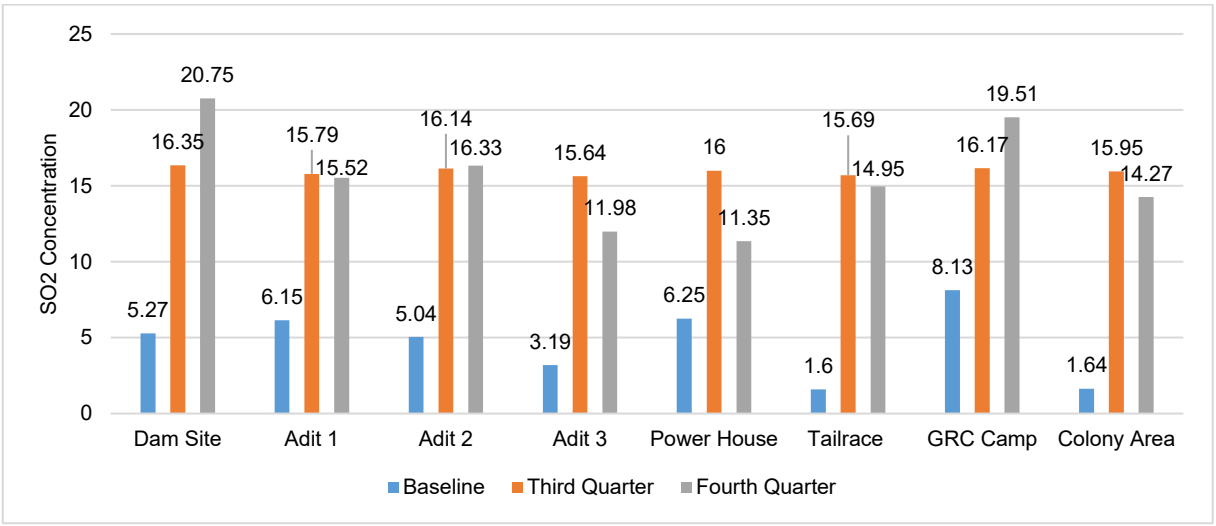
NEQS: 40 mg/m^3, WHO: 40 mg/m^3

Figure 5.6: Nitrogen Dioxide (NO_2) (µg/m^3) Concentrations in Quarter 3rd and Quarter 4th , 2025



NEQS: 80 µg/m^3, WHO: 25 µg/m^3

Figure 5.7: Sulfur Dioxide (SO_2) (µg/m^3) Concentrations in Quarter 3rd and Quarter 4th , 2025



NEQS: 120 µg/m^3, WHO: 40 µg/m^3

91. The results for the third and fourth quarters indicate elevated concentrations of CO, NO_x, NO_2, and SO_2 during the third quarter across several locations, particularly at the dam site, Adit 1, Adit 3, powerhouse, and GRC Camp. This increase is primarily associated with intensified construction activities, underground works, and increased operation of diesel-powered machinery and vehicles.

92. In the fourth quarter, a general declining trend in the concentrations of CO, NO_x, NO_2, and SO_2 was observed at most monitoring locations. This reduction is attributed to improved emission control measures, better site management, and partial stabilization of construction activities. Despite the increases recorded during the third quarter, all monitored parameters during both quarters remained within the NEQS and WHO guideline values.

5.3.2. Noise Monitoring

93. **Methodology.** The 24-hour noise level monitoring was carried out at the pre-identified locations, as shown in **Figure 5.1.** It is worthwhile to mention here that the A3 noise monitoring was undertaken at the nearest sensitive receptor (house).

94. A digital sound level meter with the following specifications was employed during the noise monitoring (i) HME® 9011 Sound Levels Meter, and (ii) IEC651 Type 2 & ANISI.4TYPE2 (Japan). The features of the equipment are:

- Accuracy: ± 1.5 dB (under reference condition)
- Frequency range: 31.5 Hz to 8.5K Hz
- Linearity range: 50 dB
- Measuring level: 30 – 130 dB(A), 35 – 130 dB(C)
- Digital display: 4 digits
- Resolution: 0.1 dB
- Display: 0.5 secretary
- Bar graph: 50 dB scale at 1 dB step for monitoring current sound pressure level, display period: 50 mS

95. **Comparison of results. Figure 5.2** and **Figure 5.8** show noise level monitoring results obtained during the instrumental environmental monitoring carried out in the third and fourth quarters of the reporting period. **Figure 5.8** exhibits a comparison of the two-quarter results with the baseline monitoring results.

96. The 24-hour noise monitoring results for the third and fourth quarters indicate elevated noise levels at several active construction locations, particularly at the dam site, Adit-2, Adit-3, powerhouse, tailrace, and GRC Camp, reflecting ongoing excavation, tunneling, and operation of heavy machinery. During the third quarter, average noise levels at most sites approached or slightly exceeded the NEQS guideline value of 55 dB(A) for residential areas, mainly due to continuous construction activities and increased equipment operation.

97. In the fourth quarter, a slight reduction and stabilization of noise levels were observed at most monitoring locations compared to the third quarter. This improvement can be attributed to better scheduling of activities, partial completion of high-noise works, and improved site management measures. However, localized exceedances were still recorded at tunnel-related sites, particularly during nighttime operations. Overall, the monitored noise levels during both quarters remained within the WHO guideline value of 70 dB(A), indicating compliance with international standards while highlighting the need for continued noise control and monitoring.

Table 5.2: Ambient Noise Monitoring Results in Quarter 3rd and Quarter 4th, 2025

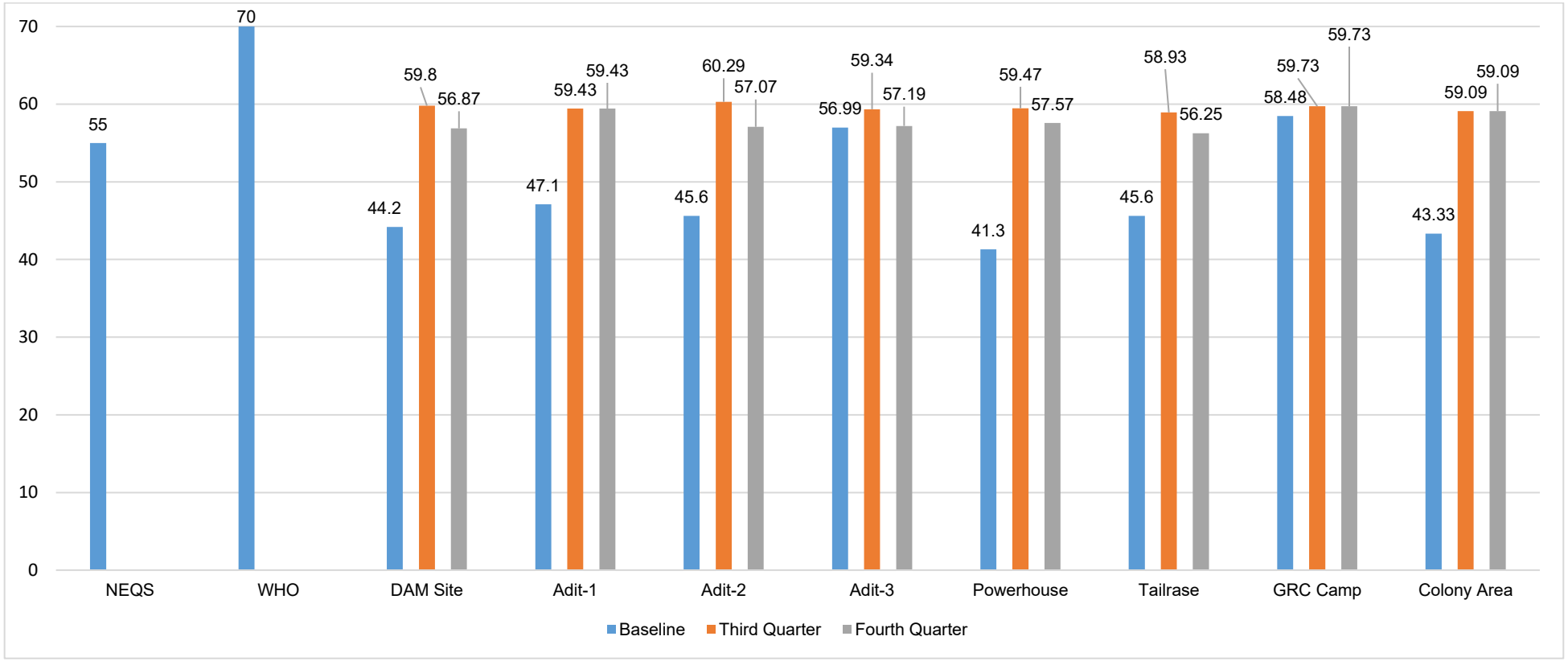
S/No	Monitoring Time	Unit	Sampling Points																					
			Dam Site			Adit -1			Adit-2			Adit-3			Powerhouse			Tailrace Upstream			GRC Camp			Colony Area		
			Results (Leq)																						
			Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter
1.	9:00 AM	dB(A)	46.70	59.0	57.6	49.60	53.1	53.1	48.10	62.3	50.5	48.00	53.5	52.8	43.80	60.0	61.2	48.10	53.2	56.0	61.00	61.1	61.1	42.50	59.5	59.5
2.	10.00 AM		46.50	55.6	52.8	49.40	61.4	61.4	47.90	58.0	60.9	47.80	58.8	52.6	43.60	59.9	55.6	47.90	55.2	53.7	60.80	57.1	57.1	43.60	54.2	54.2
3.	11.00 AM		46.30	56.8	55.1	49.20	56.0	56.0	47.70	60.0	54.4	47.60	54.8	54.1	43.40	61.4	52.5	47.70	57.1	54.1	60.50	57.8	57.8	40.90	62.9	62.9
4.	12.00 AM		46.10	61.2	52.7	49.00	58.3	58.3	47.50	61.5	59.5	47.40	61.6	60.2	43.20	63.5	55.6	47.50	55.2	57.4	60.30	59.8	59.8	41.70	60.3	60.3
5.	1:00 PM		45.80	62.6	55.2	48.70	60.4	60.4	47.20	63.4	56.6	47.10	61.1	62.6	42.90	56.9	61.9	47.20	60.7	60.3	60.10	62.4	62.4	45.30	62.0	62.0
6.	2:00 PM		45.60	59.0	56.2	48.50	57.8	57.8	47.00	60.3	55.5	46.90	59.9	54.7	42.70	56.6	59.1	47.00	57.5	56.6	59.90	56.7	56.7	44.20	59.5	59.5
7.	3:00 PM		45.40	59.2	60.9	48.30	55.2	55.2	46.80	58.4	61.2	46.70	57.3	57.8	42.50	63.8	57.6	46.80	63.0	58.9	59.70	63.1	63.1	40.90	63.2	63.2
8.	4:00 PM		45.20	58.8	60.1	48.10	58.4	58.4	46.60	62.5	57.2	46.50	54.7	54.3	42.30	65.0	62.6	46.60	54.6	55.8	59.50	55.0	55.0	43.20	53.2	53.2
9.	5:00 PM		45.00	59.6	52.2	47.90	58.2	58.2	46.40	53.2	59.2	46.30	56.0	58.1	42.10	53.9	56.5	46.40	59.7	51.2	59.20	59.0	59.0	46.40	56.5	56.5
10.	6:00 PM		44.80	63.9	61.1	47.70	60.3	60.3	46.20	55.9	62.0	46.10	59.9	57.5	41.90	58.8	60.6	46.20	60.2	54.4	59.00	59.5	59.5	45.40	60.5	60.5
11.	7:00 PM		44.50	54.6	55.1	47.40	63.4	63.4	45.90	60.8	60.5	45.80	54.8	54.9	41.60	59.4	56.3	45.90	56.3	55.7	58.80	61.9	61.9	48.70	62.2	62.2
12.	8:00 PM		44.30	62.0	59.1	47.20	62.6	62.6	45.70	58.9	56.3	45.60	63.5	56.7	41.40	59.8	54.0	45.70	59.7	59.2	58.60	54.6	54.6	42.40	55.2	55.2
13.	9:00 PM		44.10	62.9	61.2	47.00	57.1	57.1	45.50	60.1	53.4	45.40	59.9	58.0	41.20	55.0	61.1	45.50	55.2	58.1	58.40	58.7	58.7	40.20	58.5	58.5
14.	10.00 PM		43.90	63.8	54.7	46.80	61.2	61.2	45.30	59.3	60.6	45.20	54.2	57.4	41.00	59.3	62.3	45.30	58.7	53.1	58.20	60.9	60.9	44.70	62.9	62.9
15.	11.00 PM		43.70	58.8	60.0	46.60	64.4	64.4	45.10	61.6	60.4	45.00	62.2	58.0	40.80	57.5	57.8	45.10	62.8	62.5	57.90	60.8	60.8	42.10	56.3	56.3
16.	12.00 PM		43.40	62.1	55.0	46.30	54.1	54.1	44.80	65.7	53.5	44.70	58.9	57.6	40.50	60.3	53.8	44.80	65.6	53.9	57.70	56.9	56.9	44.00	64.3	64.3
17.	1:00 AM		43.20	65.0	54.2	46.10	53.0	53.0	44.60	61.8	55.4	44.50	65.1	59.7	40.30	60.4	59.0	44.60	61.6	56.4	57.50	59.1	59.1	46.20	58.4	58.4
18.	2:00 AM		43.00	60.6	57.7	45.90	60.7	60.7	44.40	56.7	53.8	44.30	62.2	61.5	40.10	61.8	61.4	44.40	58.7	52.2	57.30	60.1	60.1	41.70	59.8	59.8
19.	3:00 AM		42.80	63.6	55.6	45.70	61.2	61.2	44.20	59.7	59.9	44.10	58.2	56.7	39.90	60.7	52.6	44.20	60.5	55.4	57.10	65.5	65.5	44.10	60.6	60.6
20.	4:00 AM		42.60	59.6	56.3	45.40	65.7	65.7	44.00	61.6	58.2	43.80	65.3	63.5	39.70	57.5	56.9	44.00	64.8	57.4	56.90	65.2	65.2	42.90	57.2	57.2
21.	5:00 AM		42.30	54.3	59.4	45.20	58.1	58.1	43.70	61.4	52.5	43.60	57.3	54.7	39.40	59.3	57.2	43.70	55.8	62.0	56.60	60.1	60.1	41.00	61.1	61.1
22.	6:00 AM		42.10	60.9	56.3	45.00	65.4	65.4	43.50	59.1	54.8	43.40	56.7	56.2	39.20	62.3	54.8	43.50	62.7	54.8	56.40	60.2	60.2	40.40	60.7	60.7
23.	7:00 AM		41.90	53.8	58.9	44.80	57.6	57.6	43.30	63.0	58.0	43.20	64.0	55.6	39.00	55.6	54.8	43.30	61.2	60.5	56.20	61.3	61.3	44.30	53.3	53.3
24.	8:00 AM		41.70	57.6	57.5	44.60	62.6	62.6	43.10	61.8	55.4	43.00	64.2	57.3	38.80	58.5	56.4	43.10	54.3	50.3	56.00	56.6	56.6	43.30	55.9	55.9
Average for 24 hrs			**44.20**	**59.8**	**56.87**	**47.10**	**59.43**	**59.43**	**45.60**	**60.29**	**57.07**	**56.99**	**59.34**	**57.19**	**41.30**	**59.47**	**57.57**	**45.60**	**58.93**	**56.25**	**58.48**	**59.73**	**59.73**	**43.33**	**59.09**	**59.09**

NEQS Guideline Values: 65-55 dB[5], WHO Guideline Value: 70 dB

Leq: Log Equivalent Continuous Sound Level

[5] 65 for day time and 55 for night time (Commercial Area)

Figure 5.8: 24-hour (average) Ambient Noise Monitoring Results (dB) in 3rd Quarter and 4th Quarter, 2025



5.3.3. Water Monitoring

a. Drinking Water

98. **Methodology.** During the reporting period, the drinking water quality tests were conducted at the sample points identified in the map in **Figure 5.1,** and those collected from the sources used by the labors at the site.

99. American Public Health Association (APHA) standard methods were followed for the sampling and preservation of water and analysis. The standard methods of the American Water Works Association were also used for analysis.

100. **Comparison of drinking water results.** The two quarters of drinking water monitoring results of the sample points, and their comparison with the baseline results, are in **Table 5.3.**

101. As evident from **Table 5.3,** though there is variation in the results obtained during the third and fourth quarters, all of the recorded results fall within the WHO and NSDWQ guideline values except at Adit-2 during the third quarter and Adit-3 during both the third and fourth quarters, where the presence of *E. coli* and Total Coliforms was detected. These results indicate localized contamination and highlight the need for improved water treatment and hygiene control measures at the affected sites.

102. Accordingly, the EPC Contractor was instructed to change the water source at the affected locations to ensure compliance with WHO and NSDWQ drinking water quality standards.

b. Surface Water Results of the Kunhar River

103. For the Kunhar River water monitoring, samples were collected from three locations, i.e., dam site (upstream of the temporary diversion dam, just downstream of the Sukki Kinari HPP tailrace), tailrace upstream (Barkot), and the downstream side of the Project residential colony area. The purpose of Kunhar River water monitoring is to know the river water quality at these locations, and to make a comparison between the baseline results recorded in December 2022 and the quarterly results, enabling us to evaluate the impact of the construction activities on the river water quality.

104. Due to the non-availability of the surface water parameters under NEQS, the Kunhar River water was compared against the NEQS effluent parameters.

105. The results obtained from the instrumental environmental monitoring carried out in the third and fourth quarters of the reporting period are presented in **Table 5.4.**

Table 5.3: Drinking Water Monitoring Results in Quarter 3rd and Quarter 4th, 2025

S/No	Parameters	Standard Method	Units	WHO	NSDWQ	Sampling Points																	
						Dam Site			Adit-1			Adit-2			Adit-3			Powerhouse			GRC Camp		
						Results																	
						Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter
1.	pH	APHA-4500H+ B	--	6.5-8.5	6.5-8.5	7.4	7.8	7.5	7.7	7.6	7.1	7.3	7.5	7.6	7.7	7.5	7.4	7.5	7.2	7.4	7.7	7.9	7.6
2.	Temperature	---	°C	---	----	7	16	16	6	18	18	8	18	17	8	16	17	7	14	20	7	16	16
3.	Taste & Odor	In-house	--	Non-Objectionable	Non-Objectionable	Non-Objectionable	Non-Objectionable	Non-Objectionable	Non-Objectionable	Non-Objectionable	Non-Objectionable	Non-Objectionable	Objectionable	Non-Objectionable	Non-Objectionable	Objectionable	Objectionable	Non-Objectionable	Non-Objectionable	Non-Objectionable	Non-Objectionable	Non-Objectionable	Non-Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	4	8	6	6	7	13	5	11	10	6	9	10	10	7	14	6	13	7
5.	Turbidity	APHA-2130 B	NTU	<5	<5	3	2	4	4	2	4	4	4	3	4	4	4	4	4	3	3	4	4
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/l	< 1000	<1000	359	438	232	381	263	448	363	532	183	377	597	361	402	269	314	384	394	331
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/l	-------	<500	294	273	436	217	281	370	261	319	137	258	421	232	316	143	330	347	269	151
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/l	50	≤50	2.2	5.79	1.54	1.9	9.32	6.88	1.03	9.54	5.8	1.06	8.57	8.64	1.2	4.05	1.33	1.46	8.53	4.62
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/l	3	≤3	0.04	1.57	2.89	0.06	1.66	1.07	0.07	2.38	1.21	0.08	2.14	2.31	0.37	1.26	2.46	0.58	2.35	1.41
10.	Arsenic (As)	APHA-3500As B	mg/l	0.01	≤0.05	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/l	0.02	≤0.02	0.001	0.006	0.007	0.003	0.009	0.006	0.005	0.008	0.006	0.008	0.007	0.005	0.009	0.006	0.005	0.006	0.006	0.005
12.	Antimony (Sb)	APHA-3500Sb B	mg/l	0.005	<0.005	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/l	250	<250	128	156	114	131	160	149	138	109	95	129	69	78	105	151	164	117	156	121
14.	Chlorine	APHA-4500 CL	mg/l		0.5-1.5	0.2	0.07	0.95	0.09	0.98	0.33	0.1	0.36	0.21	0.03	0.2	0.4	0.1	0.37	0.67	0.05	0.54	0.83
15.	Lead (Pb)	APHA-3500 Pb-B	mg/l	0.01	≤0.05	0.006	N.D.	N.D.	0.001	N.D.	N.D.	0.004	N.D.	N.D.	0.005	N.D.	N.D.	0.003	N.D.	N.D.	N.D	N.D.	N.D.
16.	Fluoride	APHA-4500F- C	mg/l	1.5	≤1.5	0.73	1.1	1.3	0.58	1.3	0.7	0.86	0.2	0.12	0.75	1.04	1.12	0.91	0.5	1.2	0.64	0.7	1.3
17.	Aluminium	APHA-3500 Al	mg/l	≤ 0.2	≤0.2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/l	0.5	≤0.5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/l	0.003	0.01	N.D	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/l	0.3	0.7	0.16	0.8	0.5	0.08	0.4	0.9	0.12	0.38	0.14	0.16	0.76	0.85	0.11	0.5	0.2	0.2	0.3	0.4

S/No	Parameters	Standard Method	Units	WHO	NSDWQ	Sampling Points																	
						Dam Site			Adit-1			Adit-2			Adit-3			Powerhouse			GRC Camp		
						Results																	
						Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/l	0.001	≤0.001	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
22.	Copper (Cu)	APHA-3500 Cu-B	mg/l	2	2	0.03	0.86	1.65	0.07	1.35	0.54	0.04	0.5	0.2	N.D.	0.18	0.29	0.06	1.91	1.98	0.05	0.99	1.58
23.	Zinc (Zn)	APHA-3500 Zn B	mg/l	3	5	1.01	3.31	1.67	1.06	1.46	0.65	1.1	4.7	3.2	1.3	3.19	3.27	1.08	1.60	1.91	1.06	0.85	1.79
24.	Boron (B)	APHA 4500 B- C	mg/l	0.3	0.3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/l	0.05	≤0.05	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
26.	Selenium (Se)	APHA-3500 Se C	mg/l	0.01	0.01	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/l	0.07	≤0.05	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number /100 ml	7	0	0	0	0	0	0	16	0	0	12	19	0	0	0	0	0	0
29.	Total Coliform	APHA:9222 B	Number/100 ml	Must not be detectable in any 100 ml sample	0 Number /100 ml	13	0	0	0	0	0	0	28	0	0	20	24	0	0	0	0	0	0

ND = not detected, NSDWQ = National Standards for Drinking Water Quality, WHO = World Health Organization

Table 5.4: Surface Water Results of the Kunhar River in Quarter 3rd and Quarter 4th, 2025

S/No	Parameters	Standard Method	Units	NEQS	Sampling Points								
					Dam Site			Tailrace			Colony Area		
					Results								
					Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter
1.	Temperature	-----	°C	40	5	18	16	6	14	18	4	14	19
2.	pH	APHA-4500H+ B	--	6.5-8.5	8.3	7.9	7.5	7.9	7.3	7.7	8.1	7.3	7.8
3.	Chemical Oxygen Demand (COD)	APHA-5220-D	mg/l	150	113	87.8	100.8	108	80.9	110.3	86	81.6	125.2
4.	Biological Oxygen Demand (BOD5) at 20 °C	APHA, 5210	mg/l	80	62.8	54.38	43.44	54.7	39.67	47.53	42	41.15	48.42
5.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/l	3500	2637	1379	527	2492	1219	438	1864	1231	1147
6.	Total Suspended Solids (TSS)	APHA-2540 D	mg/l	200	129	124	135	108	107	146	117	105	158
7.	Total Hardness	APHA-2340 C	mg/l	--	164	91	115	157	99	121	161	103	135
8.	Oil & Grease	Separation Method	mg/l	10	2.8	6.45	2.34	2	3.38	2.45	1.3	3.41	2.57
9.	Chromium (Hexa & Trivalent)	APHA-3500Cr B	mg/l	1	0.61	0.05	0.33	0.55	0.9	0.38	0.41	0.92	0.45
10.	Total Iron	APHA-3500-Fe-B	mg/l	8	3.8	5.84	1.35	3.2	5.42	1.43	2.6	5.46	1.53
11.	Chloride	APHA-4500Cl- B	mg/l	1000	256	119	239	234	163	251	209	168	262
12.	Fluoride	APHA-4500F- C	mg/l	10	2.4	3.63	2.63	1.8	7.3	2.72	1.1	7.33	2.65
13.	Ammonia	ASTM-D1426-15	mg/l	40	4.9	18.04	17.19	3.7	1.04	17.25	2.9	1.06	18.35
14.	Cadmium	APHA-3500 Cd-B	mg/l	0.1	0.01	0	0	0.008	0	0	0.006	0	0
15.	Lead	APHA-3500-Pb B	mg/l	0.5	0.08	N.D	N.D	0.03	N.D	N.D	0.01	N.D	N.D
16.	Arsenic	APHA-3500As B	mg/l	1	N D	N.D	N.D	N D	N.D	N.D	N D	N.D	N.D
17.	Copper	APHA-3500Cu B	mg/l	1	0.27	N.D	N.D	N D	N.D	N.D	N D	N.D	N.D
18.	Barium	APHA-3500Ba B	mg/l	1.5	0.07	0.06	0.25	0.04	0.61	0.31	0.03	0.60	0.42
19.	Selenium	APHA- 3500 Se C	mg/l	0.5	N.D	N.D	N.D	N.D	N.D	N.D	N D	N.D	N.D
20.	Silver	APHA-3500Ag-B	mg/l	1	N.D	N.D	N.D	N.D	N.D	N.D	N D	N.D	N.D
21.	Manganese	APHA-3500-Mn B	mg/l	1.5	0.33	0.7	0.6	0.28	0.13	0.7	0.26	0.1	0.9
22.	Zinc	APHA-3500-Zn B	mg/l	5	0.58	0.57	1.69	0.37	0.57	1.72	0.31	0.57	1.87
23.	Nickel	ASTM E3047-16	mg/l	1	0.15	0.8	0.8	0.11	0.18	0.9	0.08	0.2	0.8
24.	Boron	APHA-4500B-C	mg/l	6	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
25.	Mercury	APHA-3500 Hg-B	mg/l	0.01	N.D	N.D	N.D	N.D	N.D	N.D	N D	N.D	N.D
26.	Sulphide (S^{-2})	APHA-4500 S_2	mg/l	1	0.35	0.54	0.69	0.31	0.82	0.54	0.29	0.84	0.64
27.	Sulphate (SO_4)	APHA-4500-SO_4 C	mg/l	600	429	417	402	354	382	412	349	375	443
28.	An Ionic Detergent (as MBAS)	----	mg/l	20	1.1	2.83	11.33	0.9	14.6	10.43	0.4	14.42	11.32
29.	Phenolic Compound (as Phenol)	APHA-5530-D	mg/l	0.1	0.06	0.4	0.02	0.02	0.02	0.0	0.01	0.02	0.0
30.	Cyanide (as CN) total	APHA 4500-CN	mg/l	1	N.D	N.D	N.D	N.D	N.D	N.D	N D	N.D	N.D
31.	E-Coli	APHA:9222 D	Number/ 100 ml	---	Uncountable	Uncountable	Uncountable	Uncountable	Uncountable	Uncountable	Uncountable	Uncountable	Uncountable
32.	Total Coliform	APHA:9222 B	Number/ 100 ml	---	Uncountable	Uncountable	Uncountable	Uncountable	Uncountable	Uncountable	Uncountable	Uncountable	Uncountable

ND = not detected, NEQS = National Environmental Quality Standards

5.3.4. Soil Analysis

106. During quarterly instrumental environmental monitoring, the soil analysis of camps and workshop areas was also carried out to record conditions of the soil at these sites and track changes resulting from construction activities. These would obligate the EPC Contractor to restore the soil of the facilities to its original condition upon completion of the Project or handing over the site back to the owner(s).

107. A comparison of the soil analysis results obtained during the reporting period is in **Table 5.5.** The results obtained generally show consistency with slight variations in various parameters.

Table 5.5: Soil Analysis Results in 3rd Quarter and 4th Quarter, 2025

S/No	Parameters		Sampling Points and Results														
			Adit-1			Adit-2			Adit-3			GRC Camp			Powerhouse		
			Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter	Baseline	Third Quarter	Fourth Quarter
1	Soil Texture	Sand %	14	20	23	8	23	22	17	25	30	16	27	31	12	24	25
		Silt%	57	55	47	58	47	55	49	49	46	43	52	44	61	51	61
		Clay %	29	25	30	34	30	23	34	26	24	41	21	25	37	25	26
		Texture Class	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam
2	pH		8.1	8.1	7.7	8.4	7.8	7.9	8.1	8.4	7.7	8.0	7.9	7.5	8.1	8.0	7.3
3	Electrical Conductivity EC (μSm^{-1})		238	236	209	251	259	208	238	273	220	231	245	227	229	262	241
4	Phosphorus ($mgkg^{-1}$)		2.01	3.81	4.40	1.64	2.42	3.38	2.01	2.34	5.37	3.2	1.98	4.06	2.9	3.06	2.31
5	Sodium Absorption Ratio		4.07	3.64	2.04	3.53	3.97	1.45	4.07	3.07	4.19	3.54	3.96	2.45	3.37	3.48	5.76

μSm^{-1}: Micro siemens/meter
$mgkg^{-1}$: milligram per Kilogram

5.3.5. Trends

108. Due to the propagation of construction activities and the deployment of heavy construction machinery at the site, an increase in particulate matter concentration and gaseous emissions, in comparison to the baseline monitoring, was recorded at most of the monitored points, particularly during the third quarter of 2025. It is expected that after the development of access roads to construction sites and the application of regular water sprinkling on these roads, the intensity of particulate matter will be significantly decreased.

109. Similarly, with the continued application of third-party inspections of the EPC Contractor's equipment and construction machinery, emission levels from these sources are expected to be significantly reduced.

Glimpses of the Instrumental Environmental Monitoring at the Site

Ambient Air and Noise Monitoring at the Dam Site and Adit-1

Kunhar River Water Sampling at the Dam and Tailrace Sites

Drinking Water Sampling at Source and Consumer End Points

5.3.6. Summary of Monitoring Outcomes

110. The instrumental environmental monitoring results show that the ongoing construction activities and deployment of heavy machinery collectively affected the baseline air quality at the monitoring points of the project area. However, such impacts are short-term term associated with the construction period, as evident from the comparison between the hourly noise levels and particulate matter concentration results obtained during working and off-working hours.

111. To suppress fugitive dust at the site, the EPC Contractor was strictly instructed to ensure regular water sprinkling, particularly at access roads leading to construction sites, and ensure tuning of the construction equipment to reduce GHG emissions. Additionally, the payment related to water sprinkling at the sites has been made conditional on the provision of a documentary record of sprinkling duly signed by the EPC Contractor and the PMC staff.

112. Also, the PMC has instructed the EPC Contractor to either eliminate the cause of drinking water contamination at the A2 and the A3 sites or change the water supply sources and lines.

5.4. Waste Management

113. In accordance with the EPC Contractor's contract signed with the Kaghan Development Authority (KDA), the latter collected waste from camps and workshops. The collected waste was then transported to the designated site for further disposal.

114. The main sources of solid waste generation are biodegradable kitchen waste and general waste. For waste collection, the EPC Contractor has provided waste bins at prominent locations. Solid waste from these bins is regularly emptied by the Contractor's garbage collectors into a large garbage collection dumpster provided by the KDA. Currently, there are large dumpsters available for A1, GRC Sangar camp, A2, A3, and the EPC Contractor's main camp.

One of the Dumpsters Provided by the KDA for the Collection of Solid Waste (Adit-3 site).

115. For hazardous waste disposal, the EPC Contractor identified a firm, namely "M/S 3R Green Services (Waste Collector)" from Sindh province, and in February 2025, entered into an agreement with it for the collection and disposal of hazardous waste, including lubricants and plastic waste. The firm will periodically collect the hazardous waste from the site and will transport it to the approved disposal site for final disposal. The EPC Contractor will provide copies of the receipts of such collection in the monthly HSE progress report, enabling the PMC to ascertain the quantum of hazardous waste generated at the site.

116. For the safe disposal of medical waste, the EPC Contractor has already engaged a certified firm, namely ARAR (Assisting Remarkable Accomplishment Results). Under obligations of the contract, the EPC Contractor transports medical waste to the Balakot Tehsil hospital, from where ARAR collects the waste and transports it to Peshawar for final disposal at the government of KP-approved disposal site.

117. As evident from **Table 5.6,** compared to the previous reporting period, there is a significant increase in the number of used tires and oil during the current reporting period. This is due to an increase in the EPC Contractor's vehicle fleet. Also, there is a considerable increase in the biodegradable waste at the camp, which shows the number of camp occupants has increased.

118. During the reporting period, the EPC Contractor's main dispensary, established in the Paras Camp, remained fully operational. The dispensary is stocked with essential medical equipment and medicines, and a medical doctor registered with the Pakistan Medical and Dental Council (PMDC), along with a medical technician, are performing their duties at the facility. A fully furnished ambulance is also available as part of the dispensary. As the dispensary is now fully functional, an increasing number of EPC Contractor workers will avail the medical services, which may result increase in the generation of medical waste.

119. In addition to the above, the EPC Contractor has also established sub-dispensaries at the powerhouse, A2, and A3 camps, whereby a registered medical doctor (at the powerhouse site) and medical technicians are providing medical assistance to the project staff and serve as the first point of medical assistance. These arrangements will collectively increase the quantity of medical waste.

120. For the primary treatment of camps sewage, the EPC Contractor has constructed septic tanks where sewage undergoes anaerobic treatment. Additionally, provisions are in place for surface drainage in the main and site camps. The effluent from the septic tanks of the site camps flows to the soakage pit. The Contractor regularly emptied these septic tanks through the KDA-approved service providers.

121. No groundwater contamination was observed as a consequential effect of the EPC Contractor's waste management aspect of the SSEMP.

122. Despite the above, during the monitoring period, some shortcomings were also observed in the EPC Contractor's waste management operation. For example, gaps were observed in the EPC Contractor's site waste storage and housekeeping in site camps at the Paras and powerhouse sites.

Colored Solid waste bins for the Waste at the EPC GRC Main Camp

Poor Waste Management in the Pakistani Staff Section of the Main Camp

123. **Table 5.6** and **5.7** show month-wise and cumulative details of waste generated at camp(s) and sites.

Table 5.6: Solid and Lubricant Waste Generated at Camps and Sites

S/No	Type of Waste	Quantity			Disposal
		This Reporting Period	Previous Reporting Period (January-June 2025)	Cumulative for the Project	
1	Plastic waste	250 kg	63.44 kg	504.16 kg	Initially collected in the KDA-supplied waste container and then transported to the approved waste disposal site.
2	Used tyres	72 Nos	62 Nos	192 Nos	Stored in a junkyard and will be transported by the M/S 3R Green Services (Waste Collector) for final disposal.
3	Used wooden sheets	0 Kg	0 Kg	0 kg	Not produced yet.
4	Used engine oil	2280ltr	360ltr	24541ltr	Stored in barrels and will be transported by the M/S 3R Green Services (Waste Collector) for final disposal.
5	Biodegradable waste (vegetables, food, etc.)	715 Kg	532 Kg	2554 kg	Through KDA, for further processing and composting.

Table 5.7: Medical Waste and Sorbents Generated at Camps and Sites

S/No	Month	Medical Waste (kg)	Contaminated Sorbents (kg)
1	July	1.5	0.2
2	August	1.4	0.1
3	September	1.3	0.5
4	October	1.9	0.3
5	November	1.4	0.4
6	December	1.25	0.5
Total for Reporting Period (July-December 2025)		8.75	2.0
Total for Previous Reporting Period (January-June 2025)		2.4	0.96
Total till the end of the Previous Reporting Period		11.15	2.75
Cumulative for the Project		19.9	4.75

5.4.1. Spoil Disposal

124. During the reporting period, the spoil disposal operation remained in progress at the A2, A3, and upstream surge tunnel spoil disposal areas. **Table 5.8** exhibits the status of the spoil disposal areas and the quantum of spoil disposed of till the end of the reporting period.

Table 5.8: Status of Spoil Disposal Areas till the end of the Reporting Period

S/No	Spoil Disposal Area	Location	Designated Sites	Approval Status		Capacity (m^3)		
				Environmental Consent (Date)	Design Approval (Date)	Total	Total Used	Remaining
1	A2	The right bank of the Ganhool Nullah (Shakar Kot)	Adit-2 and Headrace Tunnel	July 23, 2024	October 25, 2024	330,000	138,865	191,135
2	A3	Kholian Nullah (Darvesh Abad)	Adit-3 and Headrace Tunnel			380,000	152,366	227,634

S/No	Spoil Disposal Area	Location	Designated Sites	Approval Status		Capacity (m^3)		
				Environmental Consent (Date)	Design Approval (Date)	Total	Total Used	Remaining
3	Upstream Inclined Surge Tunnel Disposal Site	Just upstream of Surge Tunnel (Sandori-Dabriyan)	Upstream Surge Tunnel	February 11, 2025	December 2, 2025	36,620	3800	32820
4	Powerhouse Spoil Disposal Site	Adjacent to the Colony site	Powerhouse	July 03, 2025	Technical Design in Progress	490,000		
5	A1 and Headrace Tunnel	Thobi Area	AI and HRT	November 13, 2025	Technical Design in Progress	310,000		

5.5. Health and Safety

5.5.1. Community Health and Safety

125. During the reporting period, the EPC Contractor undertook several initiatives toward the community's health and safety. The utmost efforts were made to construct temporary facilities like camps, batching plants, and workshops at locations isolated from the nearest community to minimize risks associated with such facilities. For example, the A2 camp, batching plant, workshop, and magazine at Ganhool Nullah, and the GRC camp at Sangar village have been constructed in complete isolation from the community. All these facilities have dedicated approach roads guarded by the Special Security Unit (SSU). Similarly, the powerhouse site camp and batching plants have been installed in the permanently acquired land, away from the sensitive receptors.

126. Although instances of non-compliance have also been observed, to suppress dust, the EPC Contractor sprinkles the katcha roads leading to various permanent facilities. For example, the entire access road R-3 to the colony and powerhouse, and the katcha sections of access road to the adit tunnel A3 were frequently sprinkled to suppress dust emanating from the heavy machinery movement. Also, some of the temporary roads, like the one at the A3 site, have been paved to eliminate dust generation. Similarly, the access roads at the dam sites are regularly being sprinkled to suppress dust and minimize dust impacts on the nearby communities.

127. The EPC Contractor frequently interacts with the representatives of various local forums and GRCs to resolve the local issues swiftly and address complaints effectively.

128. To maintain the privacy of the houses near the construction sites, green shade nets have been provided to locals on demand. While traversing the powerhouse, colony, A3, and dam sites, one can see green shades installed by the locals.

129. To maintain good working relations with the project area community, the EPC Contractor has allocated some of the environmental mitigation costs for the provision of clean drinking water and sanitation facilities. Also, budgeted awareness campaigns regarding the health and safety of the community are part of the EPC Contractor's plans. During the reporting period, the EPC Contractor took necessary actions to maintain the community water supply lines at the A3 site.

130. Although construction activities were also carried out during the night, such activities did not create a nuisance to the locals as they were mainly undertaken inside tunnels.

131. Throughout the construction sites, warning signs/messages in English and Urdu have been displayed at appropriate locations, enabling the community members to safeguard themselves from potential risks at worksites.

132. To prevent unauthorized access to construction sites, camps, workshops, batching plants, etc., these areas have been cordoned off with gates and fences and are being guarded 24/7 by personnel of the SSU.

133. The SSU maintains an in-and-out record of the community residing within the valley where the EPC Contractor's construction activities are ongoing. While this is primarily done to ensure the security of the EPC Contractor's staff, it has also created a sense of enhanced safety and security among the community members, as reported by some residents. For instance, the SSU keeps a daily record of the community residing in the Kholian Nullah valley, where the EPC Contractor's batching plant and access road to the adit tunnel A3 are located. Similar arrangements have also been made at the access roads to the main camp and other active sites.

5.5.2. Workers' Health and Safety

134. For the EPC Contractor’s workforce health and safety, not only were PPEs provided to them, but also a variety of training sessions were imparted to ensure safe working, eliminate or minimize incidents, and overcome work-related risks.

135. To effectively implement HSE provisions contained in the SSEMP, management plans, and works-related method statements, EPC Contractor has deputed 24 HSE officers to support the H & S and Environment Manager in supervising their field activities. To build the capacity of these HSE officers, in-house essential HSE trainings were provided to them from time to time.

136. During the reporting period, PMC ensured the availability of first aid boxes at all construction sites to provide first aid in case of any emergency. Also, to respond to fire outbreaks, fire extinguishers were made available at the camps, batching plants, and laboratories/offices, etc.

137. Although there were some deficiencies in the provision of clean drinking water and sanitation facilities at the construction sites, under the PMC's instructions and regular follow-up, the EPC Contractor provided sanitation facilities at most of the construction sites and ensured a regular supply of clean drinking water to the workers. As exhibited by the environmental monitoring results, drinking water complied with the NSDWQ except for A2 and A3 sites, where the PMC has issued instructions to the EPC Contractor to either eliminate the cause of contamination (E-Coli and Total Coliforms) or change the water sources. Also, the EPC Contractor’s main camps were equipped with all necessities, like accommodation, dining halls, sanitation, and games.

138. Under the provisions of the construction contract, the EPC Contractor continued to provide full-time medical services through a PMDC-registered medical doctor, who remained available at the main camp dispensary on a 24/7 basis. In order to further strengthen on-site medical services, an additional medical doctor was hired on August 22, 2025, for the dispensary at the powerhouse camp. Additionally, two dispensers were also engaged, one for the main dispensary and one for A2 and A3, to enhance healthcare coverage and improve medical support for all workers. The medical records maintained at the dispensary include details of medicines received and issued, patient names, and the types of illnesses treated.

139. **Table 5.9** presents month-wise patient records and common diseases treated at the dispensary during the reporting period.

Table 5.9: Patient Records for the Current Reporting Period

S/No	Description	July	August	September	October	November	December
1	The EPC Contractor's monthly workforce deployment	2661	2666	2752	2810	2907	2940
2	Number of patients treated at Camp Medical Facility	221	259	269	311	320	285
3	Number of patients referred to DHQ Hospital, THQ Balakot (Mansehra Medical Complex)	0	4	4	7	5	0
4	Percentage of workforce illness/treated	8 %	10 %	10 %	11 %	11%	10%
5	Type of illness	Flu. Cough	Constipation,	Pain abdomen	Flu, cough, kidney pain, and diarrhea	Generalized body pains, Weakness	Hypertension, GBA
		Kidney pain	Toothache	Burning micturition	Cough and constipation	Burning micturition, Chest infection	Sore throat
		Body aches	Leg pain	Stomach acidity	Scabies, Flu, Strep throat	Flu, cough, and fever	Headache, Hypertension
		Headache	Generalized body aches	Lethargy and body pain	minor injuries. Muscle sprains	Chest and abdominal Pain, Stomach acidity	Diarrhea. Vomiting

140. During the reporting period, medical treatment was provided for common ailments such as flu, cough, kidney pain, diarrhoea, body pain, burning micturition, chest infections, stomach acidity, and toothache. As per the maintained records, twenty patients were referred to THQ Balakot, DHQ, and Mansehra Medical Complex for further medical evaluation and treatment. The EPC Contractor provided necessary assistance to the referred patients in accessing medical care at the respective hospitals.

141. During the previous reporting period, a total of 1,085 patients were treated at the project dispensary. However, during the current reporting period, a total of 1,665 patients were treated, reflecting a notable increase in patient turnout. A comparison of the data presented in **Table 2.11** with the records of the previous reporting period indicate an approximate 11.5% increase in the EPC Contractor's workforce, which may be attributed to the initiation of new work fronts and expanded construction activities. This increase in workforce is considered a contributing factor to the higher number of patients treated at the project dispensary. **Appendix 5** presents a sample of the medical records maintained at the project dispensary.

142. The **Figure 2.9** exhibits a comparison between the patient data recorded during the two reporting periods, i.e., January to June and July to December 2025, followed by the overall presentation of the patient data recorded during the year 2025. As evident from the **Figure 5.10,** there is an increasing trend in the workforce and the patients for the reason stated above, though the number of patients treated in December 2025 is comparatively less than the previous month.

Figure 5.9: Comparison between the Patient Numbers during the Two Reporting Periods

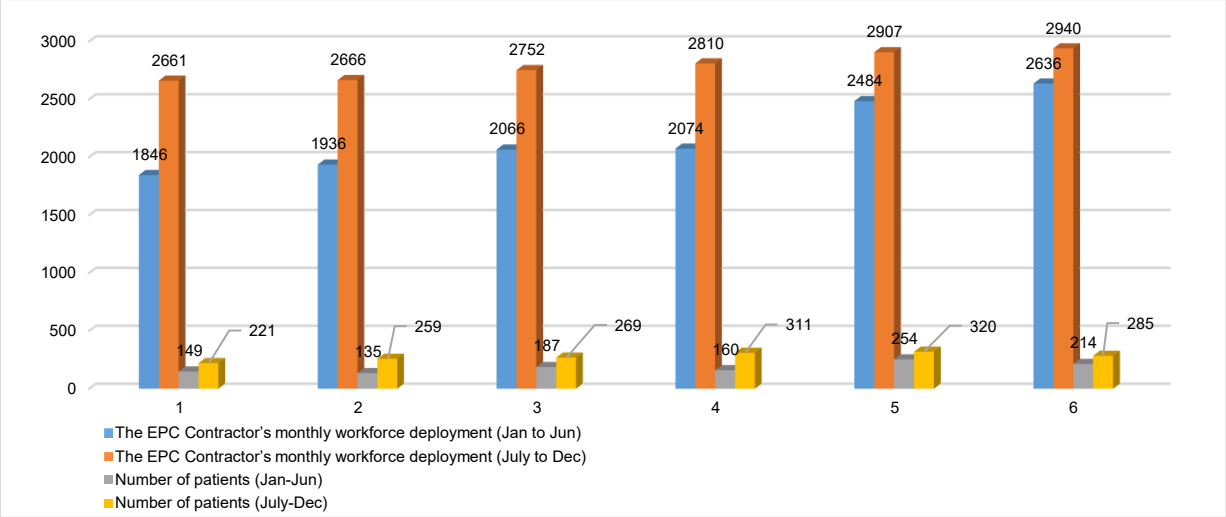
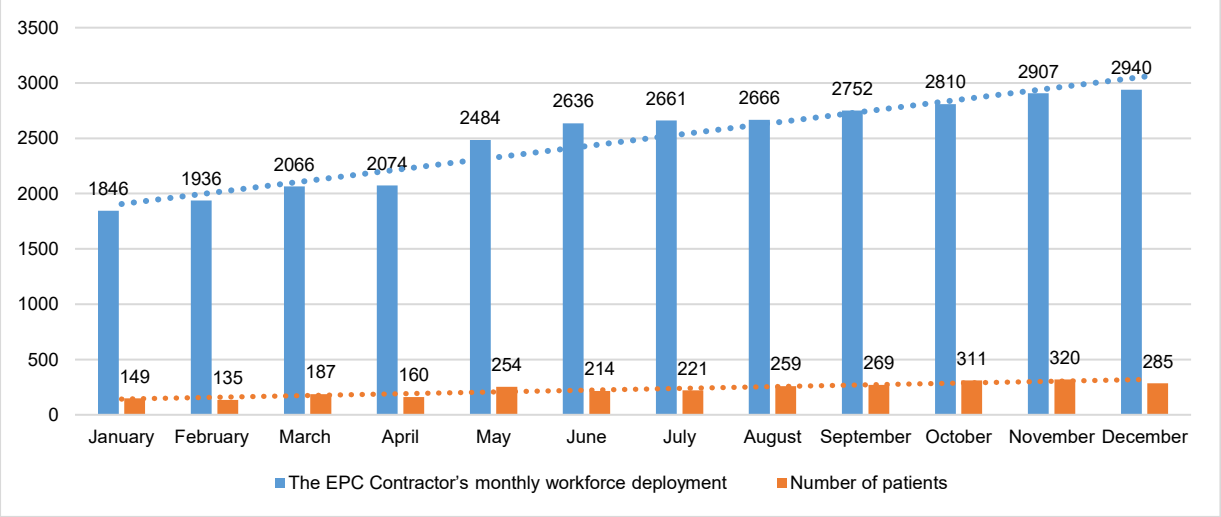


Figure 5.10: The Overall Workforce and Patient Record during the Year 2025



5.5.3. Details of Accidents during the Reporting Period.

143. As shown in **Appendix 3**, during the reporting period, a total of 27 accidents were recorded, including 25 minor, one major, and one fatal accident. The fatal accident occurred at the A2 site during the installation of a ventilation fan inside the tunnel when the axial flow fan became unstable and fell on the ground, striking the worker's chest, abdomen, and head. The fatal accident caused the death of the Chinese Foreman. In the major accident, the worker's hand entangled in the rotating mixer shaft of a feeding hopper, resulting in a severe injury to the right forearm. Despite surgical intervention, the hand was subsequently amputated due to infection after nine days. Sample copies of the EPC Contractor's initial incident reports are provided in **Appendix 4**.

144. **Fatal Accident:** As detailed in the incident report, a fatal accident occurred on November 25, 2025, at approximately 10:30 a.m., inside the Headrace Tunnel (Ch: 5+840 m) near Adit A2 (downstream) during the installation of an axial flow ventilation fan. The activity involved lifting and positioning the fan using a forklift as part of the tunnel ventilation arrangements.

145. Earlier that day, at approximately 7:30 a.m., the In-charge of the comprehensive team instructed workers to prepare tools and arrange a forklift for the installation. After obtaining permission from the warehouse supervisor, the equipment was transported to Adit A2; however, the activity was delayed due to ongoing shotcreting works inside the tunnel.

146. Following completion of shotcreting, the ventilation duct was cut, and the axial fan was placed on a steel stand mounted on the forklift at a height of approximately 4 feet. Despite advice from the electrician foreman to secure the fan and warnings from the lifter regarding unsafe positioning, the instructions were not followed. The axial flow fan became unstable and fell on the ground, striking the worker's chest, abdomen, and head.

147. The injured worker was immediately shifted in an unconscious condition to the Adit-2 dispensary and subsequently referred to Balakot Tehsil Hospital. Despite emergency medical treatment and accompaniment by the EPC Contractor's doctor, the injured worker was pronounced dead at 11:45 a.m.

148. The root cause investigation concluded that the incident resulted from the use of improper lifting equipment, failure to secure the axial fan, and non-compliance with safety instructions.

149. **Table 5.10** shows the overall incidents/accidents details covering major, minor, and fatal accidents recorded during the reporting period and since the inception of Works at Site. As evident from the table, more than 85% accidents occurred during the year 2025.

Table 5.10: Incident/Accident Summary

Minor	Major	Fatal
During Reporting Period (July-Dec 2025)		
25	1	1
During the Year 2025		
51	16	1
Since the inception of the Works in 2023		
60	19	2

5.6 Implementation Status of Environmental Management Plan

150. **Table 5.11** shows the implementation status of the pre-construction and construction phase mitigation measures in the disclosed EIA report of the Project, while the implementation status of corrective actions proposed in the previous monitoring period has been given separately in **Table 8.1.**

Table 5.11: Implementation Status of EMP (Pre-construction and Construction Phases)

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
Pre-Construction Phase						
1	Terrestrial habitat loss caused by construction related activities	Minimize disturbance to, or movement of, soil and vegetation	Yes			
		Minimize project footprint.	Yes			
		Retain as much natural vegetation as possible.	Yes			
		Locate construction facilities based on a knowledge of the soil.	Yes			
		slope and vegetation cover of the area to avoid disturbance to the natural environment	Yes			
2	Decline in abundance and diversity of terrestrial flora and fauna caused by construction related activities	Locate vehicle yards away from open soils and top soil stockyard	Yes			
		Maximize use of locally-sourced aggregate and borrow material	Yes			
		Minimize contact of non-local aggregate and borrow material with native soil.	Yes			
		Minimize disturbance to, or movement of, soil and vegetation.	Yes			
3	Blasting may pose a health hazard due to flying debris	A minimum buffer of 500 m should be provided between the settlements and point of blasting.	Yes			
4	Construction activities may be cause alterations to groundwater flow patterns	Record location of the springs especially those in areas proximal to where the underground headrace tunnel will be closer to the ground level	Yes			
5	Use of local water resources for construction activities may reduce the water	Prepare a Water Sourcing and Abstraction Plan specifying the source, owner, total yield, current usage, allowable quantity and the duration for which water can be obtained.	Yes[6]			

[6] Water source permission(s) and other details annexed to the SSEMP.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
	availability for the local communities.	To the extent possible avoid, and where unavoidable, minimize the use of water from local sources (springs) for the Project where local abstraction is unavoidable	Yes			
		Undertake an assessment of the local source identifying its total yield and current usage. If the abstraction from a single source extends three months, the assessment shall be repeated	Yes			
		Fix the allowable quantity to not more than 50% of the available yield (total yield minus current usage)	Yes			
		Enter into a formal agreement with the owner for the water source (or government if it is a public source)	Yes[7]			
6	Increase in ambient noise levels due to operation of construction equipment, movement of construction traffic and blasting may create nuisance for nearby communities and visiting tourists.	Use visual alarms in preference to audible alarms.	Yes			
		Locate noisy equipment behind parking lots, parks or behind sound barriers or sound absorbers – for example, gravel stockpiles or constructed barriers. and away from potential sources of conflict	Yes			
		Using vibratory piling instead of impact piling.	Yes			
		Erect earth mounds around the site boundary can provide acoustic as well as visual screening	Yes			
7	Failure of spoil dumping sites resulting in increased erosion and sediment load entering river	Dumping sites should have a flood prevention design for a 20- year flood		Partial	• The engineering design of the EPC Contractor's spoil disposal areas for powerhouse, A1, and HRT has not been finalized till end of the reporting period.	The EPC Contractor has been instructed to address the design team review comments and finalize the technical design of both the spoil areas at the earliest. The

[7] Agreements with the locals are annexed in the SSEMP report.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
					• The EPC Contractor has not yet submitted a proposal for the dam site spoil disposal.	spoil area design and identification of the dam site spoil area are targeted for February 25, 2026.
		Preparation of spoil management plan	Yes			
8	Permanent impact in aesthetics due to proposed developments	Develop and implement a Site Rehabilitation and Landscaping Plan	Yes			
		Use colors that better integrate with the landscape	Yes			
		Disguise elements with vegetation where possible	Yes			
		Retain as much natural vegetation as possible	Yes			
9	Improved accessibility due to construction of Project internal roads	Consult communities during final design and location of site access roads	Yes			
10	Increase in congestion, due to increased traffic volume will cause delays	Make roundabouts for the congestion points.	Yes			
		Retain as much natural vegetation as possible to reduce the impact of smoke due to vehicles.	Yes			
		Consult National Highway Authority for implementation of the above measures	Yes			
11	Loss of assets and livelihood as a result of land acquired for the Project	LARP implementation		Partial	LARP implementation is in progress.	
12	Submergence of the graveyard	Plaster the graves with mud or cement.	Yes[8]			
		If relocation of the graveyard cannot be avoided, it shall be managed through the local religious authorities.	Yes			

[8] All 19 graves from the Sangar area (Employer's colony site) have been relocated. Approximately 105 graves have been shifted from Paras Nihan to Paras Rocha Graveyards.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
13	Impact of climate change in possible enhancing of flood impacts such as during possible overtopping of spillway	Ensure minimal damage to dam structure from small amount of overtopping of spillway through design	Yes			
Construction Phase						
1	Construction Impacts	SSEMP exhibiting areas to be cleared, vegetated areas to be protected or fenced, slopes to be stabilized and solid waste disposal locations.	Yes			
2	Improvement of the river ecosystem through implementation of the BAP Loss of riverine ecosystem due to inundation by Project Reservoir Degradation of the river ecosystem in the low flow segment downstream of the Project dam Degradation of the River Ecosystem Downstream of the Tailrace Terrestrial habitat loss caused by construction related activities.	Implement BAP		Partial	The works-related measures have been taken by the EPC Contractor while for the protection measures in the Area of Management, contracts have not been signed yet with the Fisheries and Wildlife departments.	Both the Fisheries and Wildlife departments have submitted the draft contracts to the PIU for review. The PIU review is expected to be completed by January 25, 2026. The agreement signing is expected by February 28, 2026.
3	Terrestrial habitat loss caused by construction related activities.	Provide awareness training to staff and contractors on: prevention of injury of animals; identification of likely species found on site; identifications of animal hazards	Yes[9]			

[9] The annual HSE training was held on December 16 and 17, 2025.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		(such as venomous snakes); and what to do if dangerous animals are encountered				
		Solid waste should only be disposed of at designated sites and a Waste Management Plan developed and implemented.	Yes[10]			
		Prepare an Environmental Training Plan that contains awareness training to staff and contractors on: prevention of injury of animals; identification of likely species found on site; identifications of animal hazards (such as venomous snakes); and what to do if dangerous animals are encountered. Also see guidelines for the Environmental Training Plan in IR 5	Yes			
		Encourage personnel to report sightings of wildlife of conservation importance or incidents of poaching to PEDO	Yes			
		Minimize disturbance to, or movement of, soil and vegetation	Yes			
		Prevent soil damage and erosion	Yes			
		Prevent Alien Invasive Species (AIS) establishment on exposed stored soil (do not store bare soil near known sources of AIS). The habitat most at risk is the Riparian Habitat. The species that are highest risk include Parthenium Weed, Common Weed and Castor Oil Plant	Yes			
		Train and raise awareness regarding AIS among Project staff and contractors	Yes			
		Retain as much natural vegetation as possible	Yes			
		Solid waste should only be disposed of at designated sites	Yes			

[10] The EPC Contractor has hired services of the Kaghan Development Authority (KDA) for the waste disposal at the approved location(s).

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		Minimize the project footprint, clearly delineate and restrict access beyond work sites and other areas to be disturbed				
		Within the quarry and borrow areas, activities will be restricted to areas at a distance from perennial water channels so as to avoid disturbances to them including the risk of siltation	Yes			
4	Decline in abundance and diversity of terrestrial flora and fauna caused by construction related activities.	Large flood lights should not be installed outside 50 m of the Project fence.	Yes			
		Lights should be directed towards Project facilities and not towards the natural habitats.	Yes			
		Regulations for Project staff and contractors to avoid illegal poaching to be incorporated in contract documents	Yes			
		Provide awareness training to staff and contractors on: prevention of injury of animals; identification of likely species found on site; identifications of animal hazards (such as venomous snakes); and what to do if dangerous animals are encountered.	Yes			
		Incorporate regulations for Project staff and contractors to avoid illegal poaching in contract documents	Yes			
		Provide adequate knowledge to the workers on relevant government regulations and punishments for illegal poaching.	Yes			
		Encourage personnel to report sightings of wildlife of conservation importance or incidents of poaching to PEDO	Yes			
		Project staff and contractors to report kills of large mammals particularly designated species of conservation concern	Yes			
		Train and raise awareness regarding AIS among Project staff and contractors	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		The Contractor shall prepare an Environmental Training Plan for all construction workers: the Plan shall address the following items: • All Contractor's employees shall be required to comply with environmental protection procedures and they shall be able to provide evidence that they attended the training sessions detailed in the Plan; • The Plan shall educate all construction workers on the following issues but not limited to them: fire arm possession, traffic regulations, illegal logging and collection of non-timber forestry products, non-disturbance of resettlement communities, hunting and fishing restrictions, waste management, erosion control, health and safety issues, all prohibited activities, the Code of Conduct requirements and disciplinary procedures, and general information on the environment in which they will be working and living • Proposed methods for conducting the training program, which shall include formal training sessions, posters, data in newsletters, signs in construction and camp areas and 'tool box' meetings	Yes[11]			
		Equipment emitting excessive noise in comparison with other similar equipment will not be allowed to operate		Partial	Some of the generators at the site were producing noise	The EPC Contractor was instructed to repair the damaged silencers of the generators at the earliest.

[11] Detailed training plans have been given in the SSEMP.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		Equipment under use will be regularly maintained, tuned, and provided with mufflers to minimize noise levels.		Partial	There were instances where generators, particularly at the adit tunnel sites, were producing noise and air pollution.	Although the EPC Contractor addressed the issue in the previous reporting period however, the issue re-surfaced, for which the EPC Contractor was instructed to take remedial measures immediately.
		Equipment in poor state of maintenance, particularly without effective noise control will be checked to determine if it can be improved, and replaced with less noisy equipment as soon as practicable	Yes			
		Blowing of horn will be prohibited on all sensitive areas except under emergency conditions	Yes			
		Compensatory trees will be planted. The EPC Contractor will plant a minimum of ten trees for each tree removed in acquired land. PEDO will monitor and maintain the vegetation until it is established.		Partial	The updated tree plantation plan has been approved.	The EPC Contractor missed the TPP implementation target of Monsoon 2025. The revised implementation is set for the plantation season in the first quarter of 2026.
5	Increase in ambient and ground level concentration of air pollutants from construction activities and vehicular movement may cause health	Develop and implement an Air Pollution Control Plan	Yes[12]			
		Prepare a SSEMP for each construction site and must outline areas to be cleared, vegetated areas to be protected or fenced, solid waste disposal locations, and sprinkling locations	Yes			

[12] Air pollution plan is part of the SSEMP.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
	impacts to the community.	**Fugitive and exhaust emissions from transport vehicles:** • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer). • Install and maintain all vehicles and machinery with appropriate emission control equipment. • Regularly maintain vehicles and equipment to keep emissions in check. • Smoke from internal combustion engines should not be visible for more than ten seconds. • To the extent possible, use new and low emission equipment and vehicles. • Purchase best quality fuel and lubes and where possible use lead free oil and lubes. • Sprinkle water on all unsealed roads used by Project vehicles that are within 200 m of any settlement. • Cover loads and long-term piles of friable material to reduce fugitive dust emission. • Reduce traffic speeds on all unpaved surfaces to 15 miles per hour or less. • Paved roads shall be swept frequently if soil material has been carried onto adjacent paved, public thoroughfares from the Project site. • Install wheel washers where vehicle exit onto paved road from unpaved. • Wheel washing of vehicles leaving the site. • Wash vehicles/equipment prior to each trip. • Use catalytic converters on vehicles, an emission control device, used to convert		Partial	During the reporting period, instances of dust generation due to insufficient water sprinkling was observed at various locations particularly at the micro pile drilling location at the dam site and access roads.	The EPC Contractor Environmental Manager was instructed to ensure regular sprinkling on the unpaved roads particularly at the dam site and all access roads. The PMC Health and Safety monitor is regularly monitoring the site to ensure compliance to the instructions issued in the matter.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		harmful pollutants to less harmful pollutants e.g. it converts the nitrogen oxides back into nitrogen and oxygen. ♦ Appropriate maintenance of vehicles and machinery				
		Fugitive dust emissions from blasting ♦ Indicate the limits of a clearing land with highly visible markers. ♦ Leave a layer of about 5 m of undisturbed softs above the top of the overburden blasts. This will act as a blanket to contain air blast, dust and fly rock. ♦ Sprinkle water on the area where blasting is done to settle down the particulate matter emissions.		Partial	Same as above	Same as above
		Fugitive dust emissions from quarry areas ♦ Indicate the limits of a clearing land with highly visible markers. ♦ Avoid earth stripping or moving in periods of dry and windy weather. ♦ Carry out dust generating activities where maximum protection can be obtained through topography or in areas where prevailing winds will blow dust away from sensitive areas/uses. ♦ Water spraying of conveyors/conveyor transfer points, stockpiles and roads. ♦ Covering of fine dry loads or spraying of loads prior to exiting the site, and if necessary regular cleaning of public roads in the vicinity of the entrance.	Yes			
		Fugitive dust emissions from concrete batching plants ♦ Suspend earthwork operation when wind speed exceeds 20 km/hr. in areas within 500 m of any settlement.	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		• The whole process of weighing and mixing would be performed in a fully enclosed environment. • The mixers would all equip with dust collectors, no dust emission would be expected. • Siting the concrete batching plant out of prevailing high winds minimizing dust emissions. • The prevailing wind direction should be considered to ensure that bunkers and conveyors are sited in the leeward direction to minimize the effects of the wind. • The provision of natural or artificial wind barriers – such as trees, fences and landforms – to help control the emission of dust from the plant should be considered. • Batching plants should be sited on land that is not flood prone. • Batching plant should be kept as near to natural sinks to minimize emissions to ambient environment • All stacks to be vertical and at least 3 m above ground				
		Fugitive dust emissions from aggregate production and handling system • Suspend operation when wind speed exceeds 20 km/hr. in areas within 500 m of any settlement. • The prevailing wind direction should be considered to ensure that aggregate handling systems located in the leeward direction to minimize the effects of the wind.	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		• Sprinkle water on all exposed surfaces, particularly those close and up-wind of settlements.				
		Wind-blown dust from exposed surfaces such as bare land and waste dumping sites • Cover all exposed surfaces, particularly those close and up-wind of settlements. • All grading operations on a project should be suspended when winds exceed 20 miles per hour. • Minimize disturbance to, or movement of, soil and vegetation. • Sprinkle water on all exposed surfaces, particularly those close and up-wind of settlements. • Retain as much natural vegetation as possible	Yes			
		Wind-blown dust from stockpiles of dusty materials such as sand and other minerals • On-site dirt piles or other stockpiled PM should be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce wind-blown dust emissions. • Adequately wet, cover with plastic, or provide with wind shield all stockpiles to reduce dust emission. • Sprinkle water on all exposed surfaces, particularly those close and up-wind of settlements. • Minimize disturbance to, or movement of, soil and vegetation. • Prevent soil damage and erosion. • Retain as much natural vegetation as possible	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
6	Vibration from blasting during the construction phase may disturb local communities.	Develop a Blasting and Explosives Management Plan and Vibration Monitoring Plan.	Yes			
		♦ Conduct a pre-construction survey of structures at risk of vibration impacts households. ○ In the initial stages, the blasting induced vibration shall be measured as a function of maximum instantaneous charge and distance from the blasting site. This data shall be then used to refine the Blasting Induced Vibration Risk Zones on the basis of the adopted criteria. ○ Using, the refined Blasting Induced Vibration Risk Zones maps and the tunnel boring schedule, the Supervision Consultant in consultation with the PEDO and the Construction Contractor, shall identify the houses that will be affected and the impact duration and schedule. ○ For the houses that will fall in the Structural Damage Risk Zone, a temporary relocation plan will be developed. An amendment to the Land Acquisition and Resettlement Plan (LARP) will be commissioned for this purpose. Before start of blasting, all residents of houses in the Structural Damage Risk Zone will be relocated as per the LARP. ○ A survey will be undertaken in both zones, to determine the pre-blasting conditions of the buildings. The survey will be commissioned by the Supervision Consultant and will identify and record any existing damage to the structures.	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		The survey will cover the following aspects: ➢ Overall condition of the structures, both exterior and interior. ➢ Documentation of defects observed in the structure using digital imagery along with notes, measurements and sketches. ➢ Documentation of pre-existing cracks using digital imagery along with notes, measurements and sketches.				
		♦ Following completion of the blasting, the survey will be repeated in the Structural Damage Risk Zone to determine the condition of the buildings and verify that they are safe for re-occupation. If the buildings are safe, the residents will be allowed to return to their houses following any necessary damage repairs. If the buildings are damaged beyond repair, compensation will be paid to the owners as per the LARP. If there are any claims or reports of damage in the Cosmetic Damage Risk Zone, the affected house will be surveyed against the pre-Project survey and repairs will be undertaken as appropriate.	Yes			
		♦ Meaningful contact with the community shall be maintained and their grievance shall be attended to in a timely manner. In this regard: o A meaningful community engagement plan will be developed. The plan will cover identify the affected community; the key contact persons; frequency of engagement; the information to be	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		shared; the responsibilities to manage the plan; and the notice period to be giving to the community for various blasting related generating activities. o The GRM will be used to record, investigate, and respond to any complaints. Investigation of the complaints will be undertaken by the Supervision Consultant.				
		♦ Develop a Vibration Monitoring Plan that will include monitoring of vibration levels and frequency around the blasting sites. The objectives of the monitoring will be to: o ensure that vibration levels in the communities are within the adopted criteria levels; o maintain record of vibration to settle any potential conflicts; and o monitor changes in the vibration levels due to possible changes in the rock formation and take appropriate corrective actions.	Yes			
7	Blasting may pose a health hazard due to flying debris.	A minimum buffer of 500 m should be provided between the settlements and point of blasting.	Yes			
		Leave a layer of about 5 m of undisturbed softs above the top of the overburden blasts. This will act as a blanket to contain air blast, dust and fly rock.	Yes			
		Ensure that the holes are correctly collared with respect to the back-break/inclination of the face and that digging alongside the initiation face well controlled.	Yes			
		Inadequate forward displacement of the front row burden arising out of the under charging	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		of these holes will result in fly rock from vertical catering of the rear holes				
		Where fly rock possesses a serious problem, the stemming length should not be less than the whole burden. Also, an effective stemming material like crushed angular rock should be used to prevent premature venting of explosion gases through the stemming column.	Yes			
		The forward fly rock could be fairly controlled to the commonly used 'inline open loop' pattern. The maximum inter-row delay interval consistent with the absence of cut off helped in minimizing the fly rock formation. As a thumb rule an inter-row delay of 4-8ms/m of burden could be used for this purpose.	Yes			
		Adequate care should be taken while connecting the delay devices in the holes/rows and the initiation sequence properly checked before firing to avoid initiation of blast holes out of sequence.	Yes			
		Blasts designed on a face length to width ratio in the range of 3 to 4 produces minimum fly rock.	Yes			
8	Alterations of natural passage of springs due to blasting for tunnels may disrupt the water supply for mountain spring users.	Record location of the springs, especially those in areas proximal to where the underground headrace tunnel will be closer to the ground level i.e. high-risk areas.	Yes[13]			
		Monitor flow for located springs and maintain records.				
		Support the community in development of alternate water supply schemes through local NGOs	Yes			

[13] The PMC reviewed and approved the EPC Contractor's Hydro-census Report in July 2024.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		Ensure the availability of water to the communities and the access of the communities to the water resources being used by them is not adversely affected.	Yes			
9	Use of local water resources for construction activities may reduce the water availability for the local communities.	Develop a Water Sourcing and Abstraction Plan	Yes			
		Source water for construction from authorized abstraction sources agreed between the local communities, local government and EPC contractor.	Yes			
		Water conservation techniques will be developed and implemented by the EPC contractor.	Yes			
		Access of community to water sources shall be kept clear so that the community's ability to meet its water requirements are not compromised.	Yes			
		Exercise care while moving heavy machinery to avoid damage or blockage of natural waterways and channels.	Yes			
		Maintain records of water usage in all Project activities.	Yes[14]			
		Incorporate the above measures in the Construction SSEMP	Yes			
10	Discharge from construction activities can potentially result in the contamination of soil, groundwater and surface water.	Develop and implement a Water Quality Management Plan	Yes			
		Prepare and implement a Spill Prevention and Response Plan and inducted to the staff for any incident of spill.		No	The EPC Contractor has not implemented the mitigation gaps identified in various caps.	The PMC has strictly instructed the EPC Contractor to implement the mitigation measures given in various caps so as to prevent spillage incidents. The PMC has

[14] For further details refer to Section 2.4 of the report.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
						also taken actions under the provisions of the EPC Contract document by deducting the amount claimed in IPCs 32 and 33. The EPC Contractor has assured the PMC to rectify the gaps by January 30, 2026.
		Provide and use spill prevention trays at refueling locations.	Yes			
		The runoff from maintenance workshops will be collected by impervious channels and passed through oil-water separators (OWS) before final disposal. The sludge and oil collected at the OWS will be disposed of properly.		No	i. The Grease trap is part of the EPC Contractor's washing yard. As the EPC Contractor has not scheduled the washing yard, the grease trap is also pending. ii. Also, the Contractor has not decided yet whether to construct a washing yard or not.	
		Build separate impervious pits (with concrete walls and proper shed) at the construction sites for temporary handling and storage of contaminated soil and water if encountered during construction such as sludge from OWS.		No	Same as above	
		Keep all fuel storage tanks and lubricating oil drums in secondary containment impervious pits with impervious shed walls.		Partial	During the reporting period, at some locations, like A3 and the dam site, oil drums were not stored properly; hence, the aspect was termed as partially complied.	The EPC Contractor has largely rectified the gaps, while rectification of the remaining gaps was in progress till the end of the reporting period.
		Avoid on-site maintenance of construction vehicles and equipment, as far as possible.	Yes			
		Regularly inspect construction vehicles and equipment to detect leakages.	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		Store fuels and lubricants in covered and dyked areas, underlain with impervious lining.		Partial	Same as above	Same as above
		Spill control kits (shovels, plastic bags and absorbent materials) will be available near fuel and oil storage areas, vehicle parking, and vehicle maintenance areas as well as at construction sites.	Yes			
		Remove contaminated soil from the site and dispose in a manner to ensure protection of water sources.	Yes			
		Construct the bottom of any soak pit or septic tank at least 100 meters away from springs and water bores.	Yes			
		Maintain records of spills and volume of removed contaminated soil.	Yes			
		Maintain record of remedial measures taken.	Yes			
		Use silt traps to prevent contamination of river and streams.		Partial	The design of sedimentation tanks has been approved by the PMC, while the EPC Contractor has not commenced the construction of the tanks as per the design provisions.	The PMC has instructed the EPC Contractor with the subsequent reminder to immediately commence the construction of sedimentation tanks as per the approved design provisions without further delay.
		Incorporate the above measures in the Construction SSEMP	Yes			
11	Increase in ambient noise levels due to operation of construction	Develop a Noise and Vibration Control Plan	Yes[15]			
		Noise generated from construction sites from construction activities.	Yes[16]			

[15] Noise and Vibration plans are part of the approved SSEMP.
[16] The mitigation measures have largely been implied at sites.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
	equipment, movement of construction traffic and blasting may create nuisance for nearby communities and visiting tourists.	• Select the quietest available plant and equipment that can economically undertake the work required. • Undertake maintenance of the equipment as simple maintenance can reduce noise levels by as much as 50%. Parts may become loose, creating more noise because of improper operation or scraping against other parts. Grinding noises may also occur as the result of inadequate lubrication. • Equipment under use will be regularly maintained, tuned, and provided with mufflers to minimize noise levels. • Use visual alarms in preference to audible alarms. • Enclose noisy equipment. • Provide noise attenuation screens, where appropriate. • Build an enclosure around the noise source so that noise is contained. The enclosure should be free from gaps and made of dense material and be lined with noise-absorbing material like glass or polyester batts. • Locate noisy equipment behind parking lots or parks. • Close liaison with the community and regular monitoring of the noise levels in the community are key to successful implementation of the above mitigation measures. Specifically, inform communities of all major construction activities three days in advance.				
		Construction noise from traffic	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		• Fit and maintain appropriate mufflers on earth-moving and other vehicles on the site. • Mobile plants such as excavators, front-end loaders and other diesel-engine equipment should be fitted with residential class mufflers and other silencing equipment, as applicable. • Haul roads within the site should have as low a gradient as possible, and paving should be considered if practicable where noise-sensitive receptors are likely to be affected. • Owners and operators of existing facilities should implement special noise reduction measures, such as erecting purpose-built acoustic barriers, restricting opening hours and maintaining transport vehicle				
		Construction noise from on-site plant operations and equipment • All fixed plants at the work sites will be appropriately selected, and where necessary, fitted with silencers, acoustical enclosures and other noise attenuation measures. • Modify the equipment or the work area to make it quieter by substituting existing equipment with quieter equipment; retro-fitting existing equipment with damping materials, mufflers, or enclosures; erecting barriers; and maintenance. • Shifting to a quieter construction process for example pile driving is very loud as compared to boring which is a much quieter way to do the same work.	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		• Combine noisy operations to occur in the same time period. The total noise level produced will not be significantly greater than the level produced if the operations were performed separately. • All plants and equipment should be regularly maintained. • Move static plants and equipment as far as possible from sensitive boundaries, as work allows. A distance of four times further away lowers the noise by 12 dBA. A reduction of 10 dBA will sound half as loud. • Sound attenuation measures should be used for plants and equipment such as baffles and specialized mufflers, acoustic enclosures or partial enclosure housings. • Acoustic barriers need to be designed and purpose built if needed. Vegetated buffer zones can also be planted to mitigate noise from operations using suitably selected native plantings local to the area. • Reduce workers' exposure to high noise levels by keeping moving workers away from the noise source; restricting access to areas; rotating workers performing noisy tasks; and shutting down noisy equipment when not needed. • Use earplugs to reduce workers' exposure to high noise levels.				
		Noise generated from the blasting in quarry areas. • Using vibratory piling instead of impact piling.	Yes[17]			

[17] Construction materials are being supplied from the government approved sources which are located outside of the Project area

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		• Conveyor belts and crushing/screening equipment can be housed to provide acoustic screening. • It is important that sound-reduction equipment fitted to machinery is used and maintained properly. • Erect earth mounds around the site boundary can provide acoustic as well as visual screening. • Soft ground (e.g. grassland and cultivated fields) attenuation can sometimes have a greater impact in reducing noise than barrier attenuation, especially if the ground supports sound absorbing vegetation.				
		Noise emissions from concrete batching • Locate noisy equipment away from potential sources of conflict. • Locate noisy equipment behind sound barriers or sound absorbers – for example, gravel stockpiles or constructed barriers. • Install silencing devices to all pressure operated equipment	Yes			
12	Contamination of soil as a result of accidental release of solvents, oils and lubricants can degrades soil fertility and agricultural productivity.	Prepare a Spill Prevention and Response Plan and induct to the staff for any incident of spill.	Yes[18]			
		Appropriately mark fuel tanks by content and store in dyked areas with an extra 10% of the storage capacity of the fuel tank. The area will be lined with an impervious base.	Yes			
		Install grease traps on the site, wherever needed, to prevent flow of oily water.		No	The grease trap is not available	A grease trap will be constructed as part of the washing yard. EPC Contractor has not scheduled the

[18] The requisite plan is included in the approved SSEMP.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
						construction of the washing yard yet.
		Spill cleaning kit (shovels, plastic bags and absorbent materials) will be available near fuel and oil storage areas.	Yes			
		Carry cleanup kits in all fuel trucks.	Yes			
		Fueling should only take place over impermeable surfaces, other hazmat should be stored and used over impermeable surfaces.	Yes			
		The bottom of any soak pit or septic tank shall be at least 10 m above the groundwater table. The distance can be reduced, based on the soil properties, if it is established that distance will not result in contamination of groundwater.	Yes			
13	Land clearing, excavation, tunnel boring and other construction activities may loosen the top soil in the project area resulting in loss of soil and possible acceleration of soil erosion and land sliding, especially in the wet season.	Develop an Erosion Control Plan.	Yes			
		Limit vegetation loss to demarcated construction area.	Yes			
		Cover areas such as muck disposal area, batching plant, labor camp and quarry sites after the closure shall with grass and shrubs.		No[19]		
		Adopt slope stabilization measures such as adequate vertical and horizontal drains, drainage along roadsides, cross drainage and retaining walls.	Yes			
		Monitor slope movements around excavation work areas.	Yes			
		Salvage, store, and reuse all topsoil at all construction sites.	Yes[20]			

[19] The closure phase has not been reached yet.

[20] As most of the temporary facilities have either been identified on the barren land or on mountainous land hence, this and the subsequent mitigation measures are so-far not applicable. The compliance status of these mitigation measures has however been termed “Yes” exhibiting such measures are in consideration for compliance at appropriate time.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		The height of the stockpile will be minimized to the extent possible by increasing the size of the land for the stockpile.	Yes			
		Topsoil will be carefully stripped to ensure that it is not mixed with subsoil.	Yes			
		The stockpiles will be revegetated to minimize loss of soil quality, minimizing weed infestation, maintaining soil organic matter levels, maintaining soil structure and microbial activity.	Yes			
		Topsoil stockpiles will be clearly signposted for easy identification and to avoid any inadvertent losses.	Yes			
		The establishment of declared plants on the stockpiles will also be monitored and control programs implemented as required.	Yes			
		The topsoil will be treated with temporary soil stabilization and erosion control measures.	Yes			
		During removal of topsoil stockpile for restoration of project affected areas, it is preferred that the soil is removed in layers (less than 0.5 m thick) under a gradual process.	Yes			
		The top layer will be mixed with the remainder of the stockpile to ensure that living organisms are distributed throughout the topsoil material at the time of final placement. The use of micro-organism inoculates may be necessary to re-establish micro-organisms in topsoil material.	Yes			
		Select local species for plantation to restore the biodiversity of the area in consultation with Forest Department after completion of respective activities.	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
14	Failure of spoil dumping sites resulting in increased erosion and sediment load entering river	Dumping sites should have a flood prevention design for a 20-year flood.	Yes			
		The water drainage works consist of the masonry structures, and shall be designed to drain a 5-year rainfall every 10 minutes.	Yes			
		Where constructed tailing hold structure will be of galvanized woven wire mesh gabions	Yes			
		All dumping sites will undergo vegetation restoration works comprising of surface leveling, covering and forest/grass planting or agricultural land rehabilitation	Yes[21]			
		Develop a Spoil Disposal Plan that includes the following measures: • Slope movements will be monitored around excavation work areas. • Restore to the maximum extent possible the hydrological regime and reinstate natural drainage of the land (including provisions to maintain the water balance of the site and protect from flooding where appropriate). • Reinstate topsoil (in case it was stripped before construction activities). • Revegetate sites with suitable native plant species. • Drain spoil piles to prevent the concentration of flow and to prevent rill and gully erosion. • Separate organic material (e.g., roots, stumps) from the dirt fill and store separately. Place this material in long-term,	Yes[22]			

[21] All dumping sites will be rehabilitated under the terms of lease agreements, where applicable, and plantation will be undertaken on the dumping sites.
[22] Design documents of the three spoil disposal areas (A2, A3, and upstream inclined surge tunnel), containing essential details, have been reviewed and approved by the PMC. Environmental consent for the A1 and headrace tunnel and powerhouse sites has already been given to the EPC Contractor.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		upland storage sites, as it cannot be used for fill. • Store “clean” material in a short-term disposal site (stockpile) if it will likely be re-used for fill or shoulder widening projects. • Where feasible, recycle asphalt material in embankments and shoulder backing. Place these materials where they will not enter the stream system. Asphalt that is 5 years old is considered “inert” (that is, all oils washed off). • Do not add excess unusable material to permanently closed sites. • Spread material not to be re-used in compacted layers, generally conforming to the local topography. • Design the final disposal site reclamation topography to minimize the discharge of concentrated surface water and sediment off the site and into nearby watercourses. • Cover the compacted surfaces with a 6-inch layer of organic or fine-grained soil, if feasible. • After placement of the soil layer, track walk the slopes perpendicular to the contour to stabilize the soil until vegetation is established. Track walking creates indentations that trap seeds and decrease erosion of the reclaimed surfaces. (See figure on next page.). • Revegetate the disposal site with a mix of native plant species. Cover the seeded and planted areas with straw compost, mulched with straw at a rate of 1 to 1 ½ tons per acre. Apply jute netting or similar erosion				

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		control fabric on slopes greater than 1:2 if site is erosive. ♦ Locate stockpiles away from drainage lines, at least 10 meters away from natural waterways and where they will be least susceptible to wind erosion. ♦ Ensure that stockpiles and batters are designed with slopes no greater than 1:2 (vertical\ horizontal). ♦ Besides these measures, erosion can also be minimized by regular rehabilitation of areas not in use for Project activities during construction. These will include: re-grading and immediate re-vegetation (using fast-growing species and different functional groups of plants for keeping soil in place) of slopes to minimize erosion. ♦ Install erosion and sediment control measures, if possible before construction commences. · Identify drainage lines and install control measures to handle predicted stormwater and sediment loads generated in the mini-catchment. ♦ Design and install appropriate erosion and sediment run-off control measures appropriate to site conditions to handle a one-in-two-year storm event (a two-year ARI with an intensity of six hours), for temporary structures, and a one-in-fifty-year storm event, for permanent structures. ♦ Establish an adequate inspection, maintenance and cleaning program for sediment run-off control structures. Ensure that contingency plans are in place for unusual storm events.				

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		• Continually assess the effectiveness of sediment control measures and make necessary improvements. • Keep temporary disposal sites out of wetlands, adjacent riparian corridors, and ordinary high-water areas as well as high risk zones, such as 100-year floodplain and unstable slopes. • Anticipate a sufficient storage area with no risk for sediment delivery for piles that may slump. Stress cracks indicate that the pile is at risk of slumping. • Cover the trucks that will be used for the transportation of spoil material to disposal sites.				
15	Deterioration of aesthetics and visual amenity of nearby receptors due to construction activities, including vehicular movement on roads, may cause disturbance in aesthetics for tourists, businesses and nearby communities.	Minimize disturbance to, or movement of, soil and vegetation.	Yes			
		Back fill to original levels.		No	Mitigation measures will be applied upon completion of activities at site(s).	
		Reshaping to match in with surrounding topography.	Yes			
		Reinstate vegetation around construction sites.		Partial	Implementation of the tree plantation plan has not been started yet.	The implementation of the TPP is scheduled to commence in the first plantation season of 2026 i.e. in first quarter.
16	Permanent impact in aesthetics due to proposed developments.	Develop and implement a Site Rehabilitation and Landscaping Plan.	Yes			
		Use colors that better integrate with the landscape.	Yes			
		Disguise elements with vegetation where possible.	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		Retain as much natural vegetation as possible.	Yes			
17	Increase in congestion, due to increased traffic volume will cause delays.	Develop and implement a Traffic Management Plan.	Yes[23]			
		Make roundabouts for the congestion points.	Yes			
		Retain as much natural vegetation as possible to reduce the impact of smoke due to vehicles.	Yes			
		The vehicles going on the spoil routes and passing through the communities must be completely covered to avoid dust emissions.		Partial	Vehicles loaded with construction materials are generally covered; however, some of the vehicles carrying spoil materials were observed without cover, hence, the aspect is termed partially complied.	The EPC Contractor has been instructed to immediately cover materials loaded on vehicles, whether they are being transported for construction or dumping at the approved disposal sites.
		Strictly implement speed limits and defensive driving policies.				
18	Increase in traffic volume will deteriorate the air quality.	Keep speeds slow (30 km/hr) on unsealed roads.	Yes			
		Sprinkle water on unsealed roads that are used for construction traffic.		Partial	The water sprinkling on the unpaved road is not regular.	The EPC Contractor was instructed in the HSE meetings and through written instructions to undertake regular sprinkling of water on the access roads, particularly on the unpaved road leading to the dam and powerhouse sites.

[23] Traffic management plan is part of the SSEMP.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		Retain as much natural vegetation as possible to reduce the impact of smoke due to vehicles.	Yes			
		The vehicles going on the spoil routes and passing through the communities must be completely covered to avoid dust emissions.		Partial	Vehicles loaded with construction materials are generally covered; however, some of the vehicles carrying spoil materials were observed without cover, hence, the aspect is termed partially complied.	The EPC Contractor has been instructed to immediately cover materials loaded on vehicles, whether they are being transported for construction or dumping at the approved disposal sites.
		Strictly implement speed limits and defensive driving policies.	Yes			
		Promptly and properly repair and maintain roads that are subject to damage by Project activities.	Yes			
19	Increased risk to community safety due to increased traffic volume during the construction phase near communities.	Develop and implement a Traffic Management Plan.	Yes			
		Identify suitable times to transport equipment.	Yes[24]			
		Road safety awareness education will also be included during community visits or information sessions, so that communities can be familiarized with common road signs and the types of vehicles and equipment that will be moving through the area	Yes			
		Keep speeds slow (30 km/hr) where there is traffic exchange between roads.	Yes			
		Make roundabouts for the congestion points.	Yes			
		Designate traffic wardens at roads on the transport route to manage traffic during school hours.	Yes			

[24] Mostly day time transportation is undertaken

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		Construction traffic will not travel during school starting and ending hours on designated road segments in front of schools on the transport route.	Yes			
		Strictly implement speed limits and defensive driving policies.	Yes			
		Maintain vehicles especially brakes.	Yes			
20	Degradation of the pavement due to use by heavy construction traffic	Promptly and properly repair and maintain roads that are subject to damage by Project activities.	Yes			
21	Direct, indirect and induced employment at the local levels, resulting in increased prosperity and wellbeing due to higher and stable incomes of people.	**Enhancement measures**: • ensure preferential recruitment of local candidates provided they have the required skills and qualifications. • include an assessment of the contractor's demonstrated commitment to domestic and local procurement and local hiring in the tender evaluation process. • coordinate recruitment efforts related to non-skilled labor, including for non-skilled labor positions required by contractors.	Yes			
		Good practice measures: • determine what constitutes 'fair and transparent' practices in recruitment and in distribution of jobs among different community groups, in consultation with local communities and their leaders.	Yes			
22	Increase in the stock of skilled human capital due to transfer of knowledge and skill under the Project resulting in enhanced productivity of the local labor.	Support a 'Vocational Training Program' to assist local people to qualify for semi-skilled positions focusing on issues such as procurement, involvement of vulnerable groups in Project opportunities and continual professional development of staff.	Yes			
		Assist local people having practical skills but lacking qualifications to obtain their	Yes			

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
		certificates and thus increase their employment opportunities.				
		Support initiatives promoting a culture of learning in local communities.	Yes			
		Plan and implement training program for vulnerable groups to encourage their participation in economic opportunities created by the Project.	Yes			
		Assist employees and local communities to improve basic personal financial life skills through training and awareness campaigns, respectively.				
		Consider further training programs to prepare retrenched workers to seek employment in sectors not related to dam construction.	Yes			
23	Increase in recreational and subsistence fishing due to increase in catch of fish following creation of favorable habitats for the fish in the Kunhar River.	Implementation of the BAP		Partial	The works-related measures have been taken by the EPC Contractor while for the protection measures in the Area of Management, contracts have not been signed yet with the Fisheries and Wildlife departments.	Both the Fisheries and Wildlife departments have submitted the draft contracts to the PIU for review. The PIU review is expected to be completed by January 25, 2026. The agreement signing is expected by February 28, 2026.
24	Loss of income from sand and gravel mining due to change in pattern of sediment deposition following construction of the dam.	Sediment Mining and Management Guidelines are prepared and will be implemented as a part of the BAP, which will identify possible sand and gravel mining spots along the Kunhar River to meet community needs without harming the river ecology.	Yes[25]			
25	Increase in population due to in-migration of job	Development of a Grievance Redressal Mechanism	Yes			

[25] The preparation of sediment mining and management guidelines are part of the BAP implementation as included in the EIA report.

S/No	EMP Requirements		Compliance Attained		Comment on Reasons for Partial or Non-Compliance	Required Action and Target Dates to Achieve Compliance
	Impact	Mitigation Measures				
	seekers (in-migrants) leading to pressure on existing social infrastructure and services in the Study Area.	Encourage local communities to use the grievance procedure for concerns related to deterioration of local services.	Yes			
		Support local government in the implementation of infrastructure projects.	Yes			
		Support NGOs specializing in development of infrastructure to assist local government.	Yes			
26	Disputes over distribution of Project employment within and between Study Area inhabitants and the in-migrants resulting in social unrest.	Implement PEDO Stakeholder Engagement Plan including: • maintaining regular communication with local communities and other stakeholders to minimize tensions arising from Project activities; • maintaining a grievance procedure, and encourage and facilitate stakeholders to use the mechanism to express concerns; and • providing sufficient resources to the community relations officers to enable them to monitor negative perceptions and associated tensions, and to address them in a timely fashion.	Yes			
27	Potential social unrest in the Study Area due to conflicting socio-cultural norms amongst the inhabitants and in-migrants.	Plaster the graves with mud or cement.	Yes[26]			
		If relocation of the graveyard cannot be avoided, it shall be managed through the local religious authorities.	Yes			

[26] All 19 graves from the Sangar area (Employer's colony site) have been relocated. Approximately 105 graves have been shifted from Paras Nihan to Paras Rocha Graveyards.

5.7. Trainings

151. The EPC Contractor implemented several OHS and safety training programs to strengthen workplace safety culture and enhance emergency preparedness. On November 14-15, 2025, third-party Safety Technical Training was conducted through IntelloACE Trainers and Consultants for various trades. The first day was focused on first aid and scaffolding safety at the dam site office, while the second day covered safe forklift operation and heavy machinery safety, including front-end loader safety, excavator operations, and safe operation of concrete and shotcrete machinery.

152. The EPC Contractor organized an Annual Occupational Health and Safety (OHS) Training on December 16-17, 2025, at the project site in collaboration with Rescue 1122, District Mansehra. The training was participated in by the EPC Contractor's HSE officers, the PIU field staff, and the PMC HSE staff (attendance sheet of the participants is in **Appendix 6**). This training emphasized emergency response, first aid administration, fire extinguishing, and oil spill response. The first day consisted of classroom-based sessions on OHS awareness, hazard identification, risk prevention, and first aid, while the second day involved practical demonstrations, including first aid scenarios, firefighting drills, incident response, emergency evacuation, and rescue simulations at the crushing plant site. These training initiatives enhanced workers' awareness, improved emergency response capabilities, and positively contributed to strengthening the overall health and safety culture at the project site.

153. Regular toolbox talks (TBTs) were conducted by the EPC Contractor at all active work sites during the reporting period to enhance awareness of safety, health, and environmental requirements and to inform workers about control measures implemented to prevent workplace accidents and incidents. The toolbox talks focused on task-specific hazards, safe work practices, and emergency procedures. Documentary evidence of these activities, including attendance sheets and photographs, was submitted as part of the monthly HSE progress reports.

154. These training initiatives and toolbox talks significantly enhanced workers' safety awareness, strengthened emergency response capabilities, and contributed positively to improving the overall health and safety culture at the project site.

Glimpses of Training and Toolbox Talks

Presentation on Emergency Response and First Aid-Annual OHS Training (December 16, 2025)

Group Photo of the Two-Day Third-Party Safety Technical Training (November 14, 2025)

Fire Fighting Practice-Annual OHS Training Session (December 17, 2025)

First Aid Demonstration- Annual OHS Training (December 17, 2025)

Emergency Response- Annual OHS Training (December 17, 2025)

TBT regarding work at Height and use of Suitable PPE during Work (December 02, 2025)

TBT about Good Housekeeping at Worksite and Environmental Awareness (December 30, 2025)

155. During the reporting period, on October 02, 2025, final assessment test and examination for the 18 trainees enrolled in the six-month vocational training program at the Government Skill Development Centre, Hassa Balakot, were conducted. The assessment covered both trades, namely Computer Operations and Electrician, marking the completion of the second training initiated in May 2025 for eligible candidates from Paras Village. The next training is scheduled in March 2026. A total of 10 vocational trainings will be imparted during the course of the contract.

5.8. Complaints

156. During the reporting period, PIU received a total of two complaints regarding the HSE issues. **Table 5.12** exhibits a brief of the complaints and their current status.

Table 5.12: HSE Complaints Status at the End of the Reporting Period

S/No	Complaint Receipt Date	Complainant	Nature of Complaint	Status
1.	October 13, 2025	Paras and Bela Sacha Community	i. Construction of Crush Plant upstream of the dam ii. Insufficient Provision of Employment to Locals in BHPP iii. Blasting Impact iv. Impact on Water Source (Spring): v. Fugitive Dust vi. Access to Muhallah Tackol	Resolved
2.	December 10, 2025	Mukhtar Ahmad (Resident of Ganhool)	Damage to the watermill due to the spoil dumping operation near the A2 spoil disposal area.	Resolved

157. During the reporting period, the social section of the PIU received five complaints from locals. Four of these complaints have been resolved, while one is in the resolution process. The social complaints are detailed in the semi-annual social report.

6. FUNCTIONING OF THE SSEMP

6.1. SSEMP Review

158. Generally, the SSEMP serves the intended purpose of mitigating/minimizing risks associated with construction activities.

159. Various plans contained in the approved SSEMP, like pollution prevention, waste management, instrumental environmental monitoring, and health and safety plans, were satisfactorily implemented by the EPC Contractor.

160. The updated SSEMP contains the latest information regarding the EPC Contractor's camps, batching plants, access roads, sedimentation tanks, magazines, approved building demolition protocols, and the latest project salient features, maps, etc.

7. GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT

7.1. Good Practices

161. The EPC Contractor's consultation with the local area community before planning the facilities for temporary works and spoil disposal is a good initiative. For example, the consultation conducted for the upstream inclined surge tunnel and powerhouse sites remained fruitful in the finalization of the lease contracts for these sites.

162. Upon successful completion of the first vocational training, the EPC Contractor enrolled 18 eligible students in computer and electrical trades in the Government Skill Development Centre Hassa Balakot, in May 2025. The final assessment test and examination were conducted in October 2025. The next training is scheduled in March 2026. A total of 10 vocational trainings will be imparted during the course of the contract. In the long run, such training will help the trained youngsters earn their livelihood outside the project area and abroad, particularly in Middle Eastern countries where many Pakistanis are engaged in these professions. Furthermore, these trainings have created good working relations between the affected communities and the EPC Contractor.

163. To preserve the local norms and cultural values, the EPC Contractor provided veils (green shade nets) to the houses near the work area. This initiative of the EPC Contractor created a sense of norm protection in the community, resulting in conducive relations.

7.2. Opportunities for Improvement

164. Although the EPC Contractor has progressively increased the number of HSE field officers from zero at the commencement of construction activities to 24 by the end of the current reporting period, still a total of 27 accidents were recorded during the reporting period, which includes 25 minor, one major, and one fatal accident. The occurrence of these accidents during the reporting period highlights the need for regular, structured, and refresher training for HSE officers and workers to strengthen hazard identification, supervision, and compliance, and thereby effectively control and reduce workplace accidents.

165. PMC needs to enhance the training program to strengthen the team, which will lead to more effective monitoring of the site activities. By investing in additional training, PMC will ensure that all team members are equipped with the necessary skills and knowledge to manage health and safety effectively, ultimately improving overall site performance and compliance.

166. Although the EPC Contractor has created good working relations with the community by providing jobs and skilled development training, there is room for improvement in cementing such relations. This can be achieved through regular communication, addressing community concerns, and implementing social responsibility initiatives. For example, as there exist budgetary provisions for the welfare of the affected communities hence, the EPC Contractor shall consult the affected communities and shall devise plans to implement those measures on the ground. Also, there are budgeted activities for creating awareness among communities regarding health, safety, and environmental issues; however, except for champion programs for the project staff, no other vivid activities have been held in this regard. The EPC Contractor should plan such activities within the project area to create awareness among the communities and the staff.

167. To implement the tree plantation plan in the project area, the EPC Contractor should consult the affected communities for the plantation of saplings at the identification sites. The engagement of communities will be fruitful in the watch and ward of the planted saplings and will give them a sense of ownership. The initiative will also sensitise the project area communities to understand the impacts of climate change and the importance of tree plantation to cope with related challenges.

8. SUMMARY AND RECOMMENDATIONS

8.1. Summary

168. **Works:** During the reporting period, detailed engineering design activities—including planning for muck disposal areas—along with the review of the EPC Contractor's method statements and technical submissions, continued to progress. Construction works further advanced at major project components, including the dam, residential colony, access roads, powerhouse, and headrace tunnel. In parallel, protection works and the development of the powerhouse site camp were also carried forward. The River Diversion Ceremony of the Balakot Hydropower Project (300 MW) was held on October 25, 2025, marking a significant milestone in the project's development with the completion of the diversion tunnel.

169. **Reporting:** During the reporting period, ADB consented to the updated SSEMP and disclosed the SAEMR for January to June 2025. Also, the PMC issued NOC in respect of the updated SSEMP to the EPC Contractor. Additionally, the PMC reviewed and approved the proposals (from an environmental perspective) for the powerhouse, and A1 & HRT spoil disposal areas, while rejecting the proposed spoil area for the dam site being falling 50% in the reservoir. The external SAEMR for the period from January to June 2025 remained under the ADB review till end of the reporting period. During the current report period, the EPC Contractor regularly submitted the periodic HSE progress reports for the PMC's review and approval thereof.

170. **Site Audit:** During the reporting period, the ADB, AIIB safeguard teams, PEDO, and EEM visited the site in connection with the major accident (which resulted in a hand amputation of a worker) and for a general audit of the HSE activities at the Site. The gaps identified during these audits were transmitted to the EPC Contractor in the form of CAPs for necessary rectification. Till end of the reporting period, the EPC Contractor had mostly addressed the identified gaps.

171. The ADB's consultants conducted labour and OHS audit at the Site from November 24 to 28, 2025. The audit assessed the implementation status of the EPC Contractor's OHS management system, checked the OHS record, and held meetings with the EPC Contractor, PMC, and PIU HSE staff. The audit report, however, remained awaited till end of the reporting period.

172. **Training:** In October, 2025, the EPC Contractor conducted a final assessment test and examination for the 18 trainees enrolled in the six-month vocational training program at the Government Skill Development Centre, Hassa Balakot. The assessment covered both trades, namely Computer Operations and Electrician, marking the completion of the second training initiated in May 2025 for eligible candidates from Paras Village.

173. During the reporting period, the EPC Contractor also conducted several OHS and safety training programs to strengthen workplace safety culture and emergency preparedness. On November 14-15, 2025, third-party safety technical training was delivered through IntelloACE Trainers and Consultants for various trades. Additionally, the Annual OHS Training was organized on December 16-17, 2025, at the project site in collaboration with Rescue 1122, District Mansehra. These trainings were participated by the EPC Contractor, PIU, and PMC HSE site staff. The training emphasized emergency response, first aid administration, fire extinguishing, and oil spill response. These training initiatives enhance workers' awareness, improve emergency response capabilities, and contribute positively to strengthening the overall health and safety culture at the project site.

174. **Instrumental Monitoring:** During the third and fourth quarters of the reporting period, the EPC Contractor conducted instrumental environmental monitoring at the work sites and camps, including the newly constructed camp at the powerhouse site.

175. **Project-Specific BAP:** In response to the PIU's request to the Fisheries and Wildlife departments for submission of the draft agreements, both submitted draft contracts to the PIU for review in the last week of December 2025. The PIU review of the draft contracts remained in progress till the end of the reporting period.

176. **Incidents/Accidents:** During the reporting period, a total of 27 accidents were recorded, including 25 minor, one major, and one fatal accident. The fatal accident caused the death of the Chinese Foreman while the major accident resulted in the amputation of the right forearm of the injured labor.

177. **Complaints:** The two environment-related complaints received during the reporting period, from the project area community, were resolved through the effective use of GRM in place.

178. **Table 8.1** exhibits the status of implementing the targets set in the previous SAEMR during the current reporting period.

Table 8.1: Implementation Status of Corrective Action(s) Proposed in the Previous SAEMR

S/No	Issue	Required Action[27]	Responsibility	Timing (Target Date)	Description of Resolution and Timing (Actual)	Reason(s) of delay/non-achievement and further Action Required with Time frame
1.	Finalization of the sedimentation tank(s) design and construction	The EPC Contractor shall finalize the design of the sedimentation tank(s) and shall construct them at the site as per the approved design	EPC Contractor	August 25, 2025	PMC approved the sedimentation tanks design on November 10, 2025	The design of the sedimentation tanks could not be achieved by the targeted date because of the EPC Contractor's delay in addressing the PMC review comments. The PMC has already instructed, with the subsequent reminder, the EPC Contractor to immediately commence construction of the sedimentation tanks as per the approved design provisions.
2.	Finalization of the spoil disposal site identification for the Dam site	The EPC Contractor shall identify a suitable spoil disposal area for the dam site and shall submit a proposal to the PMC for review.	EPC Contractor	August 15, 2025	Although the EPC Contractor submitted the proposal on July 19, 2025, the area identified for the dam site spoil disposal was rejected on the basis of environmental and technical issues.	The EPC Contractor has been instructed to identify the spoil disposal area for the dam site by January 30, 2026.
3.	Implementation of the left-over gaps identified in the CAPs	As intimated by the PMC, the EPC Contractor shall implement the remaining gaps identified in the CAPs, i.e. i. providence of hard barricading and proper lighting along the access road near the Paras Camp and	EPC Contractor	August 12, 2025	The EPC Contractor has mostly addressed the gaps till end of the reporting period.	

[27] Actions proposed in the previous SAEMR

S/No	Issue	Required Action[27]	Responsibility	Timing (Target Date)	Description of Resolution and Timing (Actual)	Reason(s) of delay/non-achievement and further Action Required with Time frame
		elsewhere as noted in the caps. ii. installation of a fence around a section of the main camp where Pakistani employees of the EPC Contractor reside; and iii. concreting in the parking area at Adit-3 workshop				

179. The Corrective Action Plan in **Table 8.2** shows issues identified during the current monitoring period and actions proposed to resolve them within the given time frame.

Table 8.2: Corrective Action Plan against issues identified during the Current Monitoring Period

S/No	Issue	Required Action	Responsibility	Timing (Target Dates)
1	Construction of sedimentation tanks as per the approved design	The EPC Contractor shall construct the sedimentation tanks at the site as per the approved design	EPC Contractor	Immediate
2	Finalization of the spoil disposal site identification for the Dam site.	The EPC Contractor shall identify a suitable spoil disposal area for the dam site and shall submit a proposal to the PMC for review.	EPC Contractor	January 30, 2026
3	Machinery maintenance and oil change are being done without drip trays or containment.	The EPC Contractor shall develop an SOP for machinery maintenance and oil change. No maintenance shall be practiced without drip trays/containment.	EPC Contractor	January 30, 2026
4	Providence of hard barricading and signages	Barricade curves on access roads, and install visible signboards in the local language.	EPC Contractor	February 15, 2026

8.2. Recommendations

180. Given the increased number of accidents that occurred during the reporting period, the PMC's OHS team should conduct training sessions for the EPC Contractor's health and safety officers.

181. The EPC Contractor should implement the budgeted activities aimed at raising awareness and improving the well-being of the affected community. The EPC Contractor should proactively engage the community by organizing events where updates on project activities, progress, issues, and opportunities can be shared. Support from the PIU in organizing these events is recommended.

182. The EPC Contractor should hire those on a priority basis who have completed a six-month diploma in various trades under the project vocational training program. The PIU's perusal and facilitation in the matter is recommended.

183. The EPC Contractor, with the assistance of the PMC, should carry out a Training Needs Assessment (TNA) to identify competency gaps and implement targeted training programs to strengthen the overall safety culture across the project.

APPENDICES

Appendix 1: Minutes of HSE Weekly Progress Review Meeting (October 23, 2025)

Minutes of Special HSE Progress Review Meeting
Dated October 23, 2025.

S. No	Agenda Item	Action	Responsibility	Time Frame
1.	ADB auditor's visit	It is informed that two auditors from the Asian Development Bank (ADB/AIIB) will visit the Balakot Hydropower Project (BHPP) site during the first week of November 2025. One auditor will focus on Core Labour Law Compliance, while the other will review Health, Safety, and Environmental (HSE) aspects. The EPC Contractor is hereby instructed to make comprehensive preparations for the visit. This includes ensuring that all relevant documentation, records, and evidence are complete, organized, and readily available for review. Additionally, the site condition and ongoing activities must fully comply with ADB safeguard requirements. Please treat this matter as a high priority and ensure full coordination with PMC representatives during the audit.	EPC Contractor	Before 01th, November, 2025
2.	Contract of a worker	The Project Management Consultant (PMC) has instructed the EPC Contractor to ensure that employment or contract letters are issued to all workers, if any are still pending, no later than the end of October 2025. This action is required to ensure full compliance with national labour law requirements and the Asian Development Bank (ADB) safeguard provisions. Kindly confirm in writing once the process has been completed and provide supporting documentation for verification during the upcoming ADB/AIIB audit visit..	EPC Contractor	31st, October, 2025

S. No	Agenda Item	Action	Responsibility	Time Frame
3.	Documentation is present at the site	The EPC Contractor was instructed to ensure the availability of all relevant documents at the site, including but not limited to: ➢ Method Statements ➢ Site-Specific Environmental Management Plan (SSEMP) ➢ Approved Drawings ➢ HSE Documentation (including Training, TBT records, inspection checklists, permits of all high-risk jobs, etc.). ➢ Confined Space Attendance Record. ➢ Checklists for Different Heavy Machinery. ➢ Air Quality Monitoring Reports. ➢ Water Sprinkling Records. ➢ Sedimentation cleaning and maintenance record. ➢ All heavy equipment operation and maintenance manuals. ➢ Blasting management plan.	EPC Contractor	Before 31st October, 2025
4.	Signage at the site	The EPC Contractor is hereby instructed to ensure the installation of proper safety and information signage at all site access roads, tunnels, batching plants, workshops, and other relevant work areas. All signboards must be clear, visible, appropriately placed, and well-maintained to effectively guide workers, visitors, and vehicle operators. This measure is essential to maintain a safe working environment and to ensure full compliance with Health, Safety, and Environmental (HSE) requirements. Kindly confirm completion of this instruction and provide photographic evidence and a summary record for PMC review.	EPC Contractor	31st, October, 2025
5.	Generator area	The EPC Contractor is hereby instructed to ensure that all generator and compressor areas at project sites are properly barricaded and equipped with appropriate safety signage in accordance with approved Health, Safety, and Environmental (HSE) standards. Particular attention shall be given to the Adit-1 area, where immediate corrective measures are required. Access to these areas must be restricted to authorized personnel only to prevent potential hazards and to enhance overall site safety standards. Please confirm compliance and provide documentary and photographic evidence to the PMC for verification.	EPC Contractor	31st, October, 2025

S. No	Agenda Item	Action	Responsibility	Time Frame
6.	Air monitoring	The Asian Development Bank (ADB/AIIB) has instructed that air quality monitoring shall be conducted prior to each shift, and the corresponding monitoring results must be displayed prominently at the entrance of each tunnel. Furthermore, the Project Management Consultant (PMC) has already instructed the EPC Contractor to increase the frequency of air quality monitoring in line with the applicable Environmental and HSE standards. You are therefore directed to ensure full compliance with these requirements and to maintain proper records of monitoring data for verification during audits and inspections.	EPC Contractor	01st, November, 2025
7.	Oil spillage and leakages	The EPC Contractor is hereby instructed to immediately remove all oil spillages at site locations and identify the sources of leakages to prevent recurrence. All equipment shall be provided with proper drip trays and secondary containment systems to avoid soil and water contamination. Regular inspection and preventive maintenance of all heavy equipment and vehicles shall be carried out only within the designated workshop or maintenance areas. Furthermore, during oil changing activities, a protective mat or tray must be placed beneath the vehicle to prevent any ground contamination. Please ensure strict implementation of these instructions and submit evidence of compliance to the PMC.	EPC Contractor	01st, November, 2025
8.	Waste Management	The EPC Contractor is hereby instructed to ensure that color-coded waste bins are provided and properly maintained at all site locations, including work areas, tunnels, workshops, batching plants, and offices. Under no circumstances shall solid waste be dumped at unauthorized locations. All collected waste must be transferred to the designated KDA waste skip for appropriate disposal. The Contractor shall also ensure the proper implementation of the Solid Waste Management Plan as outlined in the Site-Specific Environmental Management Plan (SSEMP) to achieve full compliance with HSE and environmental requirements. Please confirm compliance and provide supporting evidence to PMC for the record.	EPC Contractor	01st, November, 2025

S. No	Agenda Item	Action	Responsibility	Time Frame
9.	HSE Non-Compliance at JV Partner (GRC)	The Project Management Consultant (PMC) has noted with serious concern that the JV partner, GRC, is not maintaining an adequate HSE culture at the site. During recent inspections, the following non-compliances were observed: • Workers are not provided with proper Personal Protective Equipment (PPE). • HSE documentation and records are not maintained at several site locations. • Scaffolding arrangements, particularly at the Bridge Site, are unsafe and not in compliance with OSHA standards. The PMC strictly instructs GRC to: 1. Immediately arrange and provide all required PPE to all workers. 2. Rectify unsafe scaffolding and ensure all temporary works comply with approved safety standards. 3. Maintain proper HSE documentation and ensure full compliance with project HSE requirements. Furthermore, it has been observed that HSE Officers are not deployed at Adit-1, Switchyard Area, and Bridge Area. The EPC Contractor is therefore instructed to immediately deploy qualified HSE Officers at all active work fronts without any delay. Additionally, CGGC is instructed to direct its JV partner (GRC) to strictly comply with all HSE requirements and maintain an effective safety culture across all sites under the project. Kindly confirm compliance and provide evidence of corrective actions to PMC at the earliest.	EPC Contractor	Immediate
10.	**Incident/Accident reporting**	The Project Management Consultant (PMC) instructs that all incidents and accidents occurring at any site location must be reported immediately through WhatsApp to the concerned PMC and Employer representatives. This initial notification shall be followed by the submission of the Initial and Final Investigation Reports in the prescribed format, in strict accordance with the procedures outlined in the Site-Specific Environmental Management Plan (SSEMP). The EPC Contractor is reminded that timely reporting and thorough investigation of all incidents are mandatory requirements under the approved HSE and ADB safeguard provisions. Please ensure strict compliance and maintain complete documentation for verification.	EPC Contractor	immediate implementation

S. No	Agenda Item	Action	Responsibility	Time Frame
11.	**Sedimentation Tank**	The PMC Design Team will soon review and approve all designs submitted by the EPC Contractor. Upon receiving the approval, the EPC Contractor is instructed to immediately commence the construction of the sedimentation tank as part of the environmental compliance measures. The construction and operation of the sedimentation tank are essential to ensure proper management of surface runoff and silt control, in accordance with the Environmental Management Plan (EMP) and ADB safeguard requirements. Please prioritize this activity and coordinate closely with the PMC Environmental and HSE teams to ensure full compliance and timely completion.	EPC Contractor	15th, November, 2025
12.	**Camp Conditions**	The Project Management Consultant (PMC) has observed that the overall condition of the workers' camps remains unsatisfactory. The following deficiencies were noted during recent inspections: Rooms at the Powerhouse are not plastered. Essential facilities such as cupboards, fans/heaters, and hot and cold-water supply have not been provided. At Adit-3, the workshop is located directly in front of the workers' camp, causing disturbance and inconvenience to the workforce. The EPC Contractor is therefore instructed to take immediate corrective actions as follows: Relocate the workshop at Adit-3 to a suitable and safe area away from the residential zone. Upgrade and maintain all workers' camps to ensure they meet the required living and welfare standards, including proper ventilation, plastering, provision of basic amenities, and sanitation facilities. Ensure that all facilities comply with OSHA standards, SSEMP provisions, and ADB safeguard requirements. Please treat this matter as urgent and confirm completion of corrective measures with documentary and photographic evidence to the PMC.	EPC Contractor	Immediate

S. No	Agenda Item	Action	Responsibility	Time Frame
13.	**Implementation of HSE issues at the site**	The Project Management Consultant (PMC) instructs the EPC Contractor to empower all HSE Officers to effectively implement HSE non-conformance corrective measures across all project sites. All Chinese site in-charges and supervisory staff must extend their full cooperation to the HSE Officers to ensure strict compliance with HSE standards, SSEMP provisions, and ADB safeguard requirements. Furthermore, all HSE personnel shall perform their duties in accordance with international HSE job protection and professional standards, ensuring that safety-related decisions are respected and implemented without interference.	EPC Contractor	Immediate Compliance
14.	**CAP after the visit of the ADB/AIIB Safeguard team to the site on September 04, 2025**	The Project Management Consultant (PMC) informs that during the ADB/AIIB Safeguard Team visit to the site on September 04, 2025, several observations were recorded, which were subsequently communicated by the Employer (PEDO) to the Contractor vide letter No. 293-96/PEDO/PD Balakot HPP, dated 12th September 2025. It has been noted that these observations have not yet been fully addressed. The EPC Contractor is therefore instructed to immediately complete the Corrective Action Plan (CAP) and submit a compliance report to the PMC and Employer, confirming that all required actions under the CAP have been fully implemented. Please treat this matter as urgent and ensure full compliance with ADB safeguard requirements.	EPC Contractor	Immediate

Enclosed: Attendance sheet

BALAKOT HPP CONSULTANTS

A JV of DOLSAR, AGES, BAK, CIV TECH, ELECTRA & TLC Consultants

LIST OF PARTICIPANTS

SPECIAL HSE MEETING HELD AT PARAS CAMP, BALAKOT HYDRO POWER PROJECT

HELD ON (OCTOBER -23-2025)

Sr.#	Name of Participants	Designation	Department/ Organization	Signature
1.	M. Hussain	DTL	PMC	[signature]
2.	SYED ALI SHAH FAWAD	H&S EXPERT	PMC	[signature]
3.	Najum-us-Saqib	Env-officer	PMC	[signature]
4.	Wang Chaowei	QHSE	CGGC	[signature]
5.	Ali Haider Shah	HSE Incharge	CGGC	[signature]
6.	Fazli Zuljalal	HSE Manager	GRC	[signature]
7.	Yawar Abbas	Mgr. Admin	GRC	[signature]
8.	Shehzad Zaini	DD EHS&G	PEDO PIU	[signature]
9.	Irshad Saeed	Envtal Manager	CGGC	[signature]
10.	Qaisar	AD-Manager	CGGC	[signature]
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

Add: Paras Camp Near N-15 Kaghan Road Tehsil Balakot District Mansehra
Tel.: +92 3052596723 Email: cggcgrcjvbk@gmail.com

Appendix 2: Copies of Instrumental Environmental Monitoring

Ambient Air Monitoring Results (Third Quarter, 2025)-Particulate Matters

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Dam Site (Paras Valley)
Monitoring Date:	30-09-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Air 34.660470, 73.455497	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	09:00 A.M	22.21	75.34		
2.	10:00 A.M	22.54	89.19		
3.	11:00 A.M	21.9	97.67		
4.	12:00 P.M	22.71	86.9		
5.	01:00 P.M	23.01	74.37		
6.	02:00 P.M	25.88	92.03		
7.	03:00 P.M	22.65	97.36		
8.	04:00 P.M	26.54	82.98		
9.	05:00 P.M	26.58	99.51		
10.	06:00 P.M	26.32	83.84		
11.	07:00 P.M	23.65	72.66		
12.	08:00 P.M	26.44	79.3	25.05 ($\mu g/m^3$)	84.29 ($\mu g/m^3$)
13.	09:00 P M	27.43	92.41		
14.	10:00 P M	25.3	76.9		
15.	11:00 P M	26.4	68.95		
16.	12:00 A M	26.46	83.22		
17.	01:00 A M	26.75	78.65		
18.	02:00 A M	27.81	99.43		
19.	03:00 A M	25.45	96.88		
20.	04:00 A M	27.26	82.25		
21.	05:00 A M	28.12	77.27		
22.	06:00 A M	25.46	70.23		
23.	07:00 A M	21.91	85.78		
24.	08:00 A M	22.42	100.12		
NEQSAA				35($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

- Selected measurement units were $\mu g/m^3$ otherwise stated.
- The client is responsible lawful usage of reported data in future.
- The report is not valid for court.

Signature of Analyst

Signature of Chief Chemist

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-1 (Thobi)
Monitoring Date:	03-10-2025	**Reporting Date:**	13-10-2025
Source:	Ambient Air	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.636125, 73.428597		

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	09:00 A.M	22.72	55.29		
2.	10:00 A.M	28.44	59.09		
3.	11:00 A.M	18.18	76.38		
4.	12:00 P.M	26.66	50.05		
5.	01:00 P.M	25.01	87.02		
6.	02:00 P.M	32.27	84.67		
7.	03:00 P.M	23.16	54.07		
8.	04:00 P.M	38.4	58		
9.	05:00 P.M	31.35	89.89		
10.	06:00 P.M	30.39	72.08		
11.	07:00 P.M	19.2	48.61		
12.	08:00 P.M	29.62	68.42		
13.	09:00 P M	34.92	52.6	27.01 ($\mu g/m^3$)	71.64 ($\mu g/m^3$)
14.	10:00 P M	34.74	86.18		
15.	11:00 P M	20.97	68.48		
16.	12:00 A M	18.69	66.29		
17.	01:00 A M	28.34	88.17		
18.	02:00 A M	19.44	91.5		
19.	03:00 A M	30.96	65.61		
20.	04:00 A M	24.74	89.86		
21.	05:00 A M	27.68	72.69		
22.	06:00 A M	34.27	85.2		
23.	07:00 A M	34.2	86.07		
24.	08:00 A M	37.49	63.22		
NEQSAA				35($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

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Signature of Analyst: ***Signature of Chief Chemist***

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-2 (Ghanool)
Monitoring Date:	30-09-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Air 34.619787, 73.417525	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	10:00 AM	18.05	52.55	18.19 ($\mu g/m^3$)	46.25 ($\mu g/m^3$)
2.	11:00 AM	20.21	59.01		
3.	12:00 PM	16.6	48.21		
4.	1:00 PM	17.29	37.11		
5.	2:00 PM	16.12	56.74		
6.	3:00 PM	18.93	46.1		
7.	4:00 PM	20.69	56.6		
8.	5:00 PM	20.84	44.9		
9.	6:00 PM	18.63	58.78		
10.	7:00 PM	16.67	44.8		
11.	8:00 PM	17.52	28.42		
12.	9:00 PM	18.1	29.26		
13.	10:00 PM	19.75	55.54		
14.	11:00 PM	15.3	33.32		
15.	12:00 AM	18.63	39.09		
16.	1:00 AM	20.25	56.09		
17.	2:00 AM	18.01	43.21		
18.	3:00 AM	19.12	35.79		
19.	4:00 AM	19.46	46.54		
20.	5:00 AM	17.11	45.95		
21.	6:00 AM	17.59	54.06		
22.	7:00 AM	14.73	44.28		
23.	8:00 AM	15.83	46.25		
24.	9:00 AM	20.93	47.52		
NEQSAA				35 ($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

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Signature of Analyst: *Signature of Chief Chemist*

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-3 (Kholian)
Monitoring Date:	01-10-2025	**Reporting Date:**	13-10-2025
Source:	Ambient Air	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.610253,73.389367		

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	09:00 A.M	20.53	66.23		
2.	10:00 A.M	18.03	64.97		
3.	11:00 A.M	20.00	59.87		
4.	12:00 P.M	21.34	62.23		
5.	01:00 P.M	24.28	55.99		
6.	02:00 P.M	21.31	80.22		
7.	03:00 P.M	21.79	71.14		
8.	04:00 P.M	19.17	78.72		
9.	05:00 P.M	19.15	72.42		
10.	06:00 P.M	19.89	79.49		
11.	07:00 P.M	19.32	70.10		
12.	08:00 P.M	21.03	60.36	21.59 ($\mu g/m^3$)	68.37 ($\mu g/m^3$)
13.	09:00 P M	24.29	58.04		
14.	10:00 P M	21.84	60.08		
15.	11:00 P M	21.23	76.23		
16.	12:00 A M	23.81	63.88		
17.	01:00 A M	23.01	73.40		
18.	02:00 A M	23.28	64.26		
19.	03:00 A M	22.34	73.34		
20.	04:00 A M	24.32	79.80		
21.	05:00 A M	22.56	80.89		
22.	06:00 A M	22.59	60.23		
23.	07:00 A M	23.87	54.81		
24.	08:00 A M	19.09	74.12		
NEQSAA				35 ($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

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WHO: World Health Organization
Note:

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Powerhouse (Barkot)
Monitoring Date:	01-10-2025	**Reporting Date:**	13-10-2025
Source:	Ambient Air	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.601812, 73.377145		

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	(µg/m3)	(µg/m3)		
1.	10:00 AM	22.09	68.11		
2.	11:00 AM	22.12	92.04		
3.	12:00 PM	20.63	91.13		
4.	1:00 PM	25.85	76.48		
5.	2:00 PM	23.17	94.84		
6.	3:00 PM	20.87	86.01		
7.	4:00 PM	20.27	72.12		
8.	5:00 PM	25.03	86.12		
9.	6:00 PM	21.38	80.32		
10.	7:00 PM	22.12	72.67		
11.	8:00 PM	20.59	76.54		
12.	9:00 PM	23.43	91.27		
13.	10:00 PM	26.35	92.66	23.17 (µg/m^3)	84.13 (µg/m^3)
14.	11:00 PM	26.37	88.98		
15.	12:00 AM	24.3	88.26		
16.	1:00 AM	25.24	91.45		
17.	2:00 AM	24.51	89.26		
18.	3:00 AM	26.45	84.05		
19.	4:00 AM	22.95	76.88		
20.	5:00 AM	21.65	97.78		
21.	6:00 AM	20.62	78.82		
22.	7:00 AM	25.69	72.47		
23.	8:00 AM	19.99	94.41		
24.	9:00 AM	24.51	76.22		
NEQSAA				35 (µg/m^3)	150(µg/m^3)
WHO				15 (µg/m^3)	45 (µg/m^3)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Tailrace Upstream (Barkot)
Monitoring Date:	02-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Air 34.596088, 73.374512	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
		Units			
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	09:00 A.M	21.66	59.78	19.67 ($\mu g/m^3$)	52.03 ($\mu g/m^3$)
2.	10:00 A.M	22.14	50.62		
3.	11:00 A.M	17.04	58.72		
4.	12:00 P.M	17.37	41.87		
5.	01:00 P.M	20.22	55.98		
6.	02:00 P.M	16.48	34.79		
7.	03:00 P.M	20.96	43.79		
8.	04:00 P.M	20.22	55.98		
9.	05:00 P.M	23.36	65.14		
10.	06:00 P.M	17.54	56.03		
11.	07:00 P.M	19.98	64.79		
12.	08:00 P.M	19.34	56.22		
13.	09:00 P M	20.31	66.57		
14.	10:00 P M	16.95	59.3		
15.	11:00 P M	19.04	41.07		
16.	12:00 A M	20.78	45.9		
17.	01:00 A M	20.56	42.98		
18.	02:00 A M	22.31	54.2		
19.	03:00 A M	17.12	48.04		
20.	04:00 A M	18.85	37		
21.	05:00 A M	18.44	42.88		
22.	06:00 A M	22.99	57.88		
23.	07:00 A M	21.9	50.11		
24.	08:00 A M	16.59	58.93		
NEQSAA				35 ($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

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Signature of Analyst: *Signature of Chief Chemist*

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	GRC Camp Office (Sanghar)
Monitoring Date:	03-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Air 34.584562, 73.373878	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	10:00 AM	32.88	52.48	28.69 ($\mu g/m3$)	72.81 ($\mu g/m3$)
2.	11:00 AM	35.76	60.89		
3.	12:00 PM	13.86	90.54		
4.	1:00 PM	29.39	65.63		
5.	2:00 PM	33.7	68.58		
6.	3:00 PM	23.48	73.38		
7.	4:00 PM	19.4	80.19		
8.	5:00 PM	17.76	71.05		
9.	6:00 PM	39.29	78.15		
10.	7:00 PM	15.38	85.88		
11.	8:00 PM	27.8	77.4		
12.	9:00 PM	28.61	87.85		
13.	10:00 PM	34.22	50.65		
14.	11:00 PM	37.57	72.55		
15.	12:00 AM	26.22	68.79		
16.	1:00 AM	33.37	66.83		
17.	2:00 AM	25.2	88.41		
18.	3:00 AM	14.45	91.38		
19.	4:00 AM	37.65	77.57		
20.	5:00 AM	37.23	70.68		
21.	6:00 AM	39.18	85.26		
22.	7:00 AM	21.88	59.98		
23.	8:00 AM	36.85	68.25		
24.	9:00 AM	27.39	56.89		
NEQSAA				35 ($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

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Signature of Analyst: *Signature of Chief Chemist*

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Colony Area (Sanghar)
Monitoring Date:	02-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Air 34.587775, 73.366225	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	10:00 AM	31.08	83.33	24.56 ($\mu g/m^3$)	60.97 ($\mu g/m^3$)
2.	11:00 AM	25.53	73.36		
3.	12:00 PM	16.39	77.82		
4.	1:00 PM	11.72	65.12		
5.	2:00 PM	29.85	45.91		
6.	3:00 PM	21.06	59.97		
7.	4:00 PM	15.06	53.33		
8.	5:00 PM	34.45	42.92		
9.	6:00 PM	22.8	46.11		
10.	7:00 PM	19.85	85.43		
11.	8:00 PM	26.1	56.05		
12.	9:00 PM	28.94	69.63		
13.	10:00 PM	24.04	42.07		
14.	11:00 PM	10.79	74.65		
15.	12:00 AM	19.31	71.07		
16.	1:00 AM	29.75	62.73		
17.	2:00 AM	34.3	58.28		
18.	3:00 AM	24	62.86		
19.	4:00 AM	34.82	59.63		
20.	5:00 AM	24.23	47.67		
21.	6:00 AM	21.36	59.15		
22.	7:00 AM	35.81	55.38		
23.	8:00 AM	26.04	56.54		
24.	9:00 AM	21.97	54.19		
NEQSAA				35 ($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

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Ambient Gaseous Monitoring Results (Third Quarter, 2025)

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Dam Site (Paras Valley)
Monitoring Date:	30-09-2025	**Reporting Date:**	13-10-2025
Source:	Ambient Air Gases	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.660470, 73.455497		

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	09:00 A.M	1.83	13.67	17.44	17.08
2.	10:00 A.M	2.81	12.74	24.20	18.25
3.	11:00 A.M	2.62	8.17	15.66	14.35
4.	12:00 P.M	1.67	8.01	12.14	16.79
5.	01:00 P.M	2.11	13.11	20.89	17.42
6.	02:00 P.M	2.03	11.10	12.07	18.69
7.	03:00 P.M	1.65	8.60	18.00	16.89
8.	04:00 P.M	1.47	20.96	20.42	12.74
9.	05:00 P.M	1.19	11.49	15.90	15.44
10.	06:00 P.M	2.12	14.77	12.29	19.91
11.	07:00 P.M	0.88	9.75	20.64	16.57
12.	08:00 P.M	2.15	18.38	23.82	17.31
13.	09:00 P M	2.21	10.83	19.33	12.73
14.	10:00 P M	0.64	8.41	10.05	12.78
15.	11:00 P M	0.79	18.90	11.71	16.73
16.	12:00 A M	2.76	9.99	23.00	12.43
17.	01:00 A M	0.38	21.72	18.98	18.95
18.	02:00 A M	1.53	15.62	17.57	16.98
19.	03:00 A M	0.89	11.40	22.44	15.67
20.	04:00 A M	0.03	18.62	24.47	13.49
21.	05:00 A M	0.18	8.38	23.04	19.87
22.	06:00 A M	1.53	21.94	12.55	14.87
23.	07:00 A M	2.73	13.69	12.97	17.26
24.	08:00 A M	0.34	18.86	22.23	19.20
Average Concentration		**1.52**	**13.71**	**17.99**	**16.35**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

- Selected measurement units were $\mu g/m^3$ & mg/m^3 otherwise stated.
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Signature of Analyst:

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-1 (Thobi)
Monitoring Date:	03-10-2025	**Reporting Date:**	13-10-2025
Source:	Ambient Air Gases	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.636125, 73.428597		

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	09:00 A.M	0.17	16.57	16.01	18.59
2.	10:00 A.M	2.38	20.26	13.52	12.60
3.	11:00 A.M	2.65	15.05	24.71	14.51
4.	12:00 P.M	1.30	17.30	11.12	16.07
5.	01:00 P.M	2.11	20.68	24.74	14.47
6.	02:00 P.M	1.13	21.64	17.42	12.57
7.	03:00 P.M	0.83	12.32	13.22	13.52
8.	04:00 P.M	0.03	11.82	18.75	13.93
9.	05:00 P.M	0.42	21.83	20.47	17.40
10.	06:00 P.M	1.21	14.56	12.77	16.73
11.	07:00 P.M	0.17	13.21	17.59	17.12
12.	08:00 P.M	0.97	15.59	10.58	19.01
13.	09:00 P M	0.18	8.47	12.86	12.59
14.	10:00 P M	0.81	8.60	12.77	12.33
15.	11:00 P M	1.68	15.25	24.16	17.80
16.	12:00 A M	2.88	13.97	21.30	15.06
17.	01:00 A M	0.02	10.98	14.26	18.64
18.	02:00 A M	0.54	19.32	12.67	19.09
19.	03:00 A M	0.21	20.36	20.01	14.19
20.	04:00 A M	1.55	16.78	17.64	12.14
21.	05:00 A M	2.47	20.61	24.83	18.89
22.	06:00 A M	2.82	20.37	15.92	19.49
23.	07:00 A M	2.31	14.65	19.98	16.94
24.	08:00 A M	2.06	10.99	14.32	15.39
Average Concentration		**1.29**	**15.88**	**17.15**	**15.79**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

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Signature of Analyst.

Signature of Chief Chemist

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	Client Name	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	Monitoring Location:	Adit-2 (Ghanool)
Monitoring Date:	30-09-2025	Reporting Date:	13-10-2025
Source: GPS Coordinates:	Ambient Air Gases 34.619787, 73.417525	Monitoring Instrument:	Aeroqual, AQMS 09

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	10:00 AM	1.93	19.46	24.10	19.31
2.	11:00 AM	1.96	20.27	24.74	19.90
3.	12:00 PM	0.64	14.22	10.34	18.96
4.	1:00 PM	1.77	20.12	16.04	15.62
5.	2:00 PM	0.49	16.83	24.07	19.09
6.	3:00 PM	2.73	16.67	13.64	17.44
7.	4:00 PM	0.80	15.92	24.50	13.11
8.	5:00 PM	2.70	21.67	24.85	14.89
9.	6:00 PM	2.00	12.25	22.76	17.17
10.	7:00 PM	2.62	21.14	10.51	12.17
11.	8:00 PM	1.88	21.80	20.81	15.81
12.	9:00 PM	0.52	11.10	19.13	15.63
13.	10:00 PM	1.90	15.40	12.42	16.30
14.	11:00 PM	0.62	21.91	21.77	18.81
15.	12:00 AM	0.58	12.21	22.28	15.55
16.	1:00 AM	2.35	19.79	11.27	17.64
17.	2:00 AM	2.91	17.75	24.79	18.81
18.	3:00 AM	1.48	9.50	23.35	16.09
19.	4:00 AM	0.12	12.78	21.56	14.46
20.	5:00 AM	1.83	8.35	23.89	14.75
21.	6:00 AM	2.60	12.15	16.37	12.32
22.	7:00 AM	2.94	21.04	18.98	13.78
23.	8:00 AM	1.70	19.68	19.59	15.93
24.	9:00 AM	2.64	8.62	23.50	13.79
Average Concentration		1.74	16.28	19.80	16.14
NEQSAA		05	40	80	120
WHO		04	---	25	40

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

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Signature of Analyst:

Signature of Chief Chemist

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-3 (Kholian)
Monitoring Date:	01-10-2025	**Reporting Date:**	13-10-2025
Source:	Ambient Air Gases	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.610253,73.389367		

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	09:00 A.M	1.86	10.43	17.27	17.60
2.	10:00 A.M	0.86	13.26	17.26	19.41
3.	11:00 A.M	0.07	11.18	17.89	18.66
4.	12:00 P.M	2.14	13.92	12.60	12.53
5.	01:00 P.M	2.38	15.07	17.83	14.63
6.	02:00 P.M	2.71	14.97	24.07	13.76
7.	03:00 P.M	0.33	18.12	22.07	14.53
8.	04:00 P.M	2.31	17.68	14.27	19.11
9.	05:00 P.M	0.84	14.83	12.53	19.56
10.	06:00 P.M	2.42	15.19	13.99	16.32
11.	07:00 P.M	2.55	16.20	20.26	16.44
12.	08:00 P.M	2.80	11.40	20.03	16.35
13.	09:00 P M	1.86	18.83	11.78	12.07
14.	10:00 P M	1.10	18.03	24.56	13.23
15.	11:00 P M	1.50	18.22	14.64	17.48
16.	12:00 A M	1.23	12.69	10.95	13.15
17.	01:00 A M	0.68	9.28	16.77	15.99
18.	02:00 A M	1.28	17.72	16.82	13.69
19.	03:00 A M	1.46	15.34	18.32	17.34
20.	04:00 A M	2.98	8.62	23.60	14.24
21.	05:00 A M	2.36	12.64	14.51	15.00
22.	06:00 A M	2.65	15.35	24.44	17.71
23.	07:00 A M	0.67	11.67	20.84	12.02
24.	08:00 A M	2.94	16.25	16.69	14.61
Average Concentration		**1.75**	**14.45**	**17.67**	**15.64**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Powerhouse (Barkol)
Monitoring Date:	01-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Air Gases 34.601812, 73.377145	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	10:00 AM	2.06	11.39	20.99	17.84
2.	11:00 AM	1.65	11.62	10.42	17.52
3.	12:00 PM	2.62	10.46	19.40	13.12
4.	1:00 PM	1.18	19.52	23.84	18.07
5.	2:00 PM	2.01	17.63	23.27	19.48
6.	3:00 PM	0.08	11.23	12.12	14.58
7.	4:00 PM	1.03	21.80	14.91	18.52
8.	5:00 PM	1.50	9.90	20.93	14.72
9.	6:00 PM	0.29	8.55	21.00	18.30
10.	7:00 PM	0.67	8.41	21.44	16.45
11.	8:00 PM	0.91	14.63	19.06	15.37
12.	9:00 PM	0.70	13.19	11.36	13.69
13.	10:00 PM	1.61	13.84	19.01	15.02
14.	11:00 PM	2.94	14.42	14.53	16.46
15.	12:00 AM	1.17	13.37	22.71	12.55
16.	1:00 AM	2.03	8.19	24.76	18.61
17.	2:00 AM	2.44	9.54	22.16	19.17
18.	3:00 AM	2.57	9.33	23.60	13.71
19.	4:00 AM	1.39	14.43	23.66	16.53
20.	5:00 AM	0.98	19.69	11.76	14.93
21.	6:00 AM	0.56	20.18	22.22	17.26
22.	7:00 AM	2.54	13.32	16.41	15.12
23.	8:00 AM	1.17	18.07	18.01	12.91
24.	9:00 AM	0.19	16.12	22.99	14.14
Average Concentration		**1.43**	**13.70**	**19.19**	**16.00**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Tailrace Upstream (Barkot)
Monitoring Date:	02-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Air Gases 34.596088, 73.374512	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	09:00 A.M	1.05	13.98	16.86	13.23
2.	10:00 A.M	1.28	15.94	16.36	14.42
3.	11:00 A.M	1.49	8.80	19.18	12.46
4.	12:00 P.M	1.61	8.18	15.45	12.63
5.	01:00 P.M	2.16	18.60	10.78	12.45
6.	02:00 P.M	0.70	16.85	21.45	19.60
7.	03:00 P.M	2.69	20.61	23.51	19.62
8.	04:00 P.M	1.67	18.14	17.77	19.10
9.	05:00 P.M	1.26	11.27	12.18	18.44
10.	06:00 P.M	1.19	20.45	14.62	14.94
11.	07:00 P.M	2.17	8.43	13.53	19.75
12.	08:00 P.M	1.11	17.04	12.10	14.77
13.	09:00 P M	1.68	18.43	17.63	14.43
14.	10:00 P M	2.01	21.62	13.13	19.13
15.	11:00 P M	0.29	11.78	24.11	19.58
16.	12:00 A M	2.01	12.94	16.58	17.35
17.	01:00 A M	2.32	13.79	21.74	13.96
18.	02:00 A M	0.43	10.21	18.99	12.81
19.	03:00 A M	1.92	10.51	23.17	13.06
20.	04:00 A M	2.05	18.39	15.60	14.82
21.	05:00 A M	2.76	14.02	18.30	13.85
22.	06:00 A M	1.56	19.66	17.91	13.36
23.	07:00 A M	1.77	11.18	12.54	18.16
24.	08:00 A M	1.80	19.82	17.48	14.71
Average Concentration		**1.62**	**15.03**	**17.12**	**15.69**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

- Selected measurement units were $\mu g/m^3$ & mg/m^3 otherwise stated.
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- The report is not valid for court.

Signature of Analyst: ***Signature of Chief Chemist:***

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	GRC Camp Office (Sanghar)
Monitoring Date:	03-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Air Gases 34.584562, 73.373878	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	10:00 AM	2.70	9.04	24.30	15.40
2.	11:00 AM	2.34	13.51	24.03	16.22
3.	12:00 PM	2.53	17.23	18.22	16.34
4.	1:00 PM	0.52	14.14	16.05	18.69
5.	2:00 PM	0.08	14.50	20.01	12.22
6.	3:00 PM	0.87	15.08	10.85	19.22
7.	4:00 PM	2.49	20.57	18.14	15.63
8.	5:00 PM	2.15	21.20	23.49	17.22
9.	6:00 PM	1.78	17.20	10.89	12.60
10.	7:00 PM	2.20	19.07	24.95	15.63
11.	8:00 PM	2.64	9.38	10.37	14.98
12.	9:00 PM	2.48	15.32	19.78	19.84
13.	10:00 PM	2.32	20.56	23.22	12.66
14.	11:00 PM	1.99	12.43	16.60	17.49
15.	12:00 AM	0.53	19.91	12.19	18.50
16.	1:00 AM	0.01	18.80	20.32	14.24
17.	2:00 AM	2.34	17.72	14.57	14.95
18.	3:00 AM	0.58	11.87	21.96	18.16
19.	4:00 AM	0.54	8.44	17.13	18.86
20.	5:00 AM	0.30	20.52	11.60	13.42
21.	6:00 AM	1.96	21.70	10.86	17.63
22.	7:00 AM	2.79	21.73	23.93	17.47
23.	8:00 AM	2.97	21.91	16.99	17.93
24.	9:00 AM	2.50	11.78	11.29	12.84
Average Concentration		**1.73**	**16.40**	**17.57**	**16.17**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

- Selected measurement units were $\mu g/m^3$ & mg/m^3 otherwise stated.
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Signature of Analyst: ***Signature of Chief Chemist***

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Colony Area (Snaghar)
Monitoring Date:	02-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Air Gases 34.587775, 73.366225	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	10:00 AM	2.40	19.33	11.45	14.41
2.	11:00 AM	0.72	18.59	21.60	17.64
3.	12:00 PM	1.74	13.50	16.47	13.61
4.	1:00 PM	1.67	11.06	17.04	13.49
5.	2:00 PM	1.84	9.91	16.38	14.66
6.	3:00 PM	0.51	11.35	16.92	15.00
7.	4:00 PM	1.88	20.76	21.86	13.65
8.	5:00 PM	1.91	13.42	19.42	17.31
9.	6:00 PM	1.56	10.16	15.86	15.88
10.	7:00 PM	1.32	14.55	22.35	16.31
11.	8:00 PM	0.46	8.98	24.71	19.90
12.	9:00 PM	0.49	20.48	14.21	15.84
13.	10:00 PM	0.49	8.71	19.78	14.41
14.	11:00 PM	0.85	14.73	10.62	19.65
15.	12:00 AM	1.11	15.13	17.32	13.29
16.	1:00 AM	2.49	16.00	16.09	17.45
17.	2:00 AM	0.29	13.65	17.87	17.70
18.	3:00 AM	1.55	9.95	18.35	12.66
19.	4:00 AM	2.68	11.12	23.74	16.40
20.	5:00 AM	2.32	21.11	23.32	16.18
21.	6:00 AM	2.21	15.97	20.79	14.95
22.	7:00 AM	2.20	11.42	24.52	14.81
23.	8:00 AM	2.98	15.70	12.33	18.31
24.	9:00 AM	2.63	18.41	10.40	19.37
Average Concentration		**1.60**	**14.33**	**18.06**	**15.95**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

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Ambient Noise level Results (Third Quarter, 2025)

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Dam Site (Paras Valley)
Monitoring Date:	30-09-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Noise 34.660470, 73.455497	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	09:00 A.M	dB(A)	55.9	62.1	59.0
2.	10:00 A.M		52.6	58.7	55.6
3.	11:00 A.M		55.7	57.9	56.8
4.	12:00 P.M		48.6	73.9	61.2
5.	01:00 P.M		51.0	74.2	62.6
6.	02:00 P.M		49.1	69.0	59.0
7.	03:00 P.M		53.3	65.0	59.2
8.	04:00 P.M		48.3	69.4	58.8
9.	05:00 P.M		47.0	72.1	59.6
10.	06:00 P.M		54.1	73.7	63.9
11.	07:00 P.M		52.6	56.5	54.6
12.	08:00 P.M		48.8	75.2	62.0
13.	09:00 P M		50.1	75.6	62.9
14.	10:00 P M		56.6	70.9	63.8
15.	11:00 P M		47.7	70.0	58.8
16.	12:00 A M		49.5	74.8	62.1
17.	01:00 A M		56.1	73.9	65.0
18.	02:00 A M		47.6	73.7	60.6
19.	03:00 A M		56.7	70.6	63.6
20.	04:00 A M		54.1	65.1	59.6
21.	05:00 A M		47.7	60.9	54.3
22.	06:00 A M		55.0	66.8	60.9
23.	07:00 A M		50.0	57.5	53.8
24.	08:00 A M		53.4	61.9	57.6
NEQS limit : 45-55 dB WHO limit: 70 dB					

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

- Selected measurement units were dB (A) otherwise stated.
- The client is responsible lawful usage of reported data in future.
- The report is not valid for court.

Signature of Analyst:

Signature of Chief Chemist

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-1 (Thobi)
Monitoring Date:	03-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Noise 34.636125, 73.428597	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	09:00 A.M	dB(A)	50.1	56.1	53.1
2.	10:00 A.M		48.8	73.9	61.4
3.	11:00 A.M		53.3	58.8	56.0
4.	12:00 P.M		56.5	60.2	58.3
5.	01:00 P.M		55.2	65.7	60.4
6.	02:00 P.M		52.2	63.5	57.8
7.	03:00 P.M		52.3	58.0	55.2
8.	04:00 P.M		55.5	61.3	58.4
9.	05:00 P.M		55.7	60.8	58.2
10.	06:00 P.M		48.2	72.4	60.3
11.	07:00 P.M		52.2	74.6	63.4
12.	08:00 P.M		51.5	73.8	62.6
13.	09:00 P M		47.5	66.8	57.1
14.	10:00 P M		56.1	66.3	61.2
15.	11:00 P M		55.6	73.3	64.4
16.	12:00 A M		47.8	60.4	54.1
17.	01:00 A M		48.8	57.3	53.0
18.	02:00 A M		48.4	72.9	60.7
19.	03:00 A M		48.8	73.6	61.2
20.	04:00 A M		56.3	75.1	65.7
21.	05:00 A M		47.5	68.6	58.1
22.	06:00 A M		56.3	74.6	65.4
23.	07:00 A M		50.1	65.0	57.6
24.	08:00 A M		49.4	75.8	62.6

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

- Selected measurement units were dB (A) otherwise stated.
- The client is responsible lawful usage of reported data in future.
- The report is not valid for court.

Signature of Analyst: ***Signature of Chief Chemist***

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-2 (Ghanool)
Monitoring Date:	30-09-2025	**Reporting Date:**	13-10-2025
Source:	Ambient Noise	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2
GPS Coordinates:	34.619787, 73.417525		

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	10:00 AM	dB(A)	53.1	71.5	62.3
2.	11:00 AM		48.0	68.0	58.0
3.	12:00 PM		55.5	64.5	60.0
4.	1:00 PM		47.1	75.8	61.5
5.	2:00 PM		54.4	72.4	63.4
6.	3:00 PM		55.2	65.3	60.3
7.	4:00 PM		51.6	65.2	58.4
8.	5:00 PM		49.9	75.2	62.5
9.	6:00 PM		49.4	57.0	53.2
10.	7:00 PM		51.3	60.4	55.9
11.	8:00 PM		56.1	65.4	60.8
12.	9:00 PM		48.3	69.4	58.9
13.	10:00 PM		53.5	66.8	60.1
14.	11:00 PM		55.7	62.9	59.3
15.	12:00 AM		52.2	70.9	61.6
16.	1:00 AM		56.5	74.9	65.7
17.	2:00 AM		53.8	69.7	61.8
18.	3:00 AM		54.9	58.6	56.7
19.	4:00 AM		54.4	65.1	59.7
20.	5:00 AM		53.3	70.0	61.6
21.	6:00 AM		53.8	69.0	61.4
22.	7:00 AM		50.9	67.4	59.1
23.	8:00 AM		55.3	70.6	63.0
24.	9:00 AM		53.6	70.1	61.8

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-3 (Kholian)
Monitoring Date:	01-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Noise 34.610253,73.389367	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	09:00 A.M	dB(A)	49.7	57.3	53.5
2.	10:00 A.M		49.4	68.1	58.8
3.	11:00 A.M		52.2	57.4	54.8
4.	12:00 P.M		51.9	71.4	61.6
5.	01:00 P.M		55.2	66.9	61.1
6.	02:00 P.M		49.0	70.8	59.9
7.	03:00 P.M		49.7	64.9	57.3
8.	04:00 P.M		52.5	56.8	54.7
9.	05:00 P.M		55.4	56.6	56.0
10.	06:00 P.M		53.6	66.2	59.9
11.	07:00 P.M		51.4	58.3	54.8
12.	08:00 P.M		51.2	75.8	63.5
13.	09:00 P M		54.0	65.8	59.9
14.	10:00 P M		50.8	57.7	54.2
15.	11:00 P M		52.9	71.6	62.2
16.	12:00 A M		55.5	62.4	58.9
17.	01:00 A M		56.1	74.1	65.1
18.	02:00 A M		55.4	69.0	62.2
19.	03:00 A M		54.9	61.6	58.2
20.	04:00 A M		56.2	74.4	65.3
21.	05:00 A M		49.5	65.1	57.3
22.	06:00 A M		55.4	58.0	56.7
23.	07:00 A M		55.0	73.1	64.0
24.	08:00 A M		55.9	72.6	64.2

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

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Signature of Analyst: ***Signature of Chief Chemist***

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Powerhouse (Barkot)
Monitoring Date:	01-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Noise 34.601812, 73.377145	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	10:00 AM	dB(A)	48.0	72.0	60.0
2.	11:00 AM		51.8	67.9	59.9
3.	12:00 PM		52.3	70.6	61.4
4.	1:00 PM		53.7	73.4	63.5
5.	2:00 PM		49.6	64.1	56.9
6.	3:00 PM		50.0	63.2	56.6
7.	4:00 PM		52.1	75.4	63.8
8.	5:00 PM		56.9	73.1	65.0
9.	6:00 PM		51.2	56.7	53.9
10.	7:00 PM		49.0	68.7	58.8
11.	8:00 PM		53.1	65.8	59.4
12.	9:00 PM		49.6	70.0	59.8
13.	10:00 PM		54.1	56.0	55.0
14.	11:00 PM		48.1	70.5	59.3
15.	12:00 AM		47.6	67.5	57.5
16.	1:00 AM		53.0	67.6	60.3
17.	2:00 AM		55.1	65.8	60.4
18.	3:00 AM		49.3	74.4	61.8
19.	4:00 AM		50.1	71.4	60.7
20.	5:00 AM		56.4	58.5	57.5
21.	6:00 AM		49.2	69.4	59.3
22.	7:00 AM		54.4	70.2	62.3
23.	8:00 AM		52.4	58.8	55.6
24.	9:00 AM		52.0	65.0	58.5

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Tailrace Upstream (Barkot)
Monitoring Date:	02-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Noise 34.596088, 73.374512	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	09:00 A.M	dB(A)	47.9	58.5	53.2
2.	10:00 A.M		50.7	59.7	55.2
3.	11:00 A.M		53.4	60.7	57.1
4.	12:00 P.M		52.3	58.1	55.2
5.	01:00 P.M		48.6	72.8	60.7
6.	02:00 P.M		53.3	61.7	57.5
7.	03:00 P.M		54.8	71.2	63.0
8.	04:00 P.M		47.3	62.0	54.6
9.	05:00 P.M		52.4	67.0	59.7
10.	06:00 P.M		55.0	65.3	60.2
11.	07:00 P.M		53.9	58.8	56.3
12.	08:00 P.M		51.5	67.8	59.7
13.	09:00 P M		53.5	57.0	55.2
14.	10:00 P M		56.5	60.9	58.7
15.	11:00 P M		54.1	71.5	62.8
16.	12:00 A M		55.3	75.9	65.6
17.	01:00 A M		54.6	68.6	61.6
18.	02:00 A M		56.2	61.3	58.7
19.	03:00 A M		48.0	73.0	60.5
20.	04:00 A M		56.5	73.1	64.8
21.	05:00 A M		55.5	56.2	55.8
22.	06:00 A M		50.2	75.3	62.7
23.	07:00 A M		54.9	67.6	61.2
24.	08:00 A M		50.7	57.9	54.3
NEQS limit : 45-55 dB WHO limit: 70 dB					

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

- Selected measurement units were dB (A) otherwise stated.
- The client is responsible lawful usage of reported data in future.
- The report is not valid for court.

Signature of Analyst

Signature of Chief Chemist

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	GRC Camp Office (Sanghar)
Monitoring Date:	03-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Noise 34.584562, 73.373878	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	10:00 AM	dB(A)	54.7	67.5	61.1
2.	11:00 AM		54.1	60.1	57.1
3.	12:00 PM		51.4	64.3	57.8
4.	1:00 PM		55.5	64.0	59.8
5.	2:00 PM		52.7	72.0	62.4
6.	3:00 PM		53.1	60.4	56.7
7.	4:00 PM		54.9	71.4	63.1
8.	5:00 PM		53.9	56.1	55.0
9.	6:00 PM		54.1	64.0	59.0
10.	7:00 PM		48.7	70.4	59.5
11.	8:00 PM		52.5	71.3	61.9
12.	9:00 PM		52.2	56.9	54.6
13.	10:00 PM		52.9	64.5	58.7
14.	11:00 PM		51.2	70.7	60.9
15.	12:00 AM		49.9	71.7	60.8
16.	1:00 AM		50.6	63.2	56.9
17.	2:00 AM		56.6	61.6	59.1
18.	3:00 AM		52.8	67.5	60.1
19.	4:00 AM		56.0	75.1	65.5
20.	5:00 AM		55.6	74.8	65.2
21.	6:00 AM		53.7	66.6	60.1
22.	7:00 AM		47.4	73.0	60.2
23.	8:00 AM		51.1	71.6	61.3
24.	9:00 AM		48.9	64.3	56.6

NEQS limit : 55-65 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

- Selected measurement units were dB (A) otherwise stated.
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Signature of Analyst

Signature of Chief Chemist

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Colony Area (Sanghar)
Monitoring Date:	02-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates:**	Ambient Noise 34.587775, 73.366225	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	10:00 AM	dB(A)	47.6	71.4	59.5
2.	11:00 AM		51.9	56.5	54.2
3.	12:00 PM		54.3	71.4	62.9
4.	1:00 PM		47.5	73.1	60.3
5.	2:00 PM		51.8	72.1	62.0
6.	3:00 PM		53.6	65.4	59.5
7.	4:00 PM		51.8	74.7	63.2
8.	5:00 PM		49.2	57.3	53.2
9.	6:00 PM		53.6	59.4	56.5
10.	7:00 PM		53.5	67.5	60.5
11.	8:00 PM		50.1	74.2	62.2
12.	9:00 PM		48.2	62.2	55.2
13.	10:00 PM		48.1	68.9	58.5
14.	11:00 PM		53.6	72.2	62.9
15.	12:00 AM		49.9	62.8	56.3
16.	1:00 AM		55.3	73.3	64.3
17.	2:00 AM		56.9	59.9	58.4
18.	3:00 AM		53.5	66.2	59.8
19.	4:00 AM		51.7	69.5	60.6
20.	5:00 AM		50.1	64.2	57.2
21.	6:00 AM		54.5	67.8	61.1
22.	7:00 AM		53.3	68.2	60.7
23.	8:00 AM		48.8	57.7	53.3
24.	9:00 AM		50.9	61.0	55.9

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

- Selected measurement units were dB (A) otherwise stated.
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Signature of Analyst

Signature of Chief Chemist

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Drinking Water Monitoring Results (Third Quarter, 2025)

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Dam Site (Paras Valley)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates;**	Spring Water (Source) 34.653167, 73.445678	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.4
2.	Temperature	—	°C	—	—	12
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	11
5.	Turbidity	APHA-2130 B	NTU	<5	<5	3
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	404
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	——	<500	290
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	2.44
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	1.70
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.006
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	135
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.43
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	0.2
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.9
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.11
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	4.22
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	

NDWQS National Drinking Water Quality Standards **WHO** World Health Organization
N D Not Detected

Signature of Analyst: *Signature of Chief Chemist*

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Dam Site (Paras Valley)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates;**	Tap Water (End User) 34.660653, 73.455772	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.8
2.	Temperature	—	°C	—	—	16
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	8
5.	Turbidity	APHA-2130 B	NTU	<5	<5	2
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	438
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	———	<500	273
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	5.79
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	1.57
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.006
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	156
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.07
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.1
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.8
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.86
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	3.31
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	

NDWQS National Drinking Water Quality Standards WHO World Health Organization
N D Not Detected

Signature of Analyst: Signature of Chief Chemist

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-1 (Thobi)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates;**	Spring Water (Source) 34.636125, 73.428597	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	--	6.5-8.5	6.5-8.5	7.3
2.	Temperature	---	°C	---	----	13
3.	Taste & Odor	In-house	--	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	10
5.	Turbidity	APHA-2130 B	NTU	<5	<5	2
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	460
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	-------	<500	337
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	8.29
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	2.05
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.006
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	122
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.95
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.3
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.3
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.23
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	1.60
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0

NDWQS National Drinking Water Quality Standards **WHO** World Health Organization
N D Not Detected

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Signature of Analyst: ***Signature of Chief Chemist***

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-1 (Thobi)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates;**	Tap Water (End User) 34.636125, 73.428597	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	--	6.5-8.5	6.5-8.5	7.1
2.	Temperature	---	°C	---	----	18
3.	Taste & Odor	In-house	--	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	13
5.	Turbidity	APHA-2130 B	NTU	<5	<5	4
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	448
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	-------	<500	370
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	6.88
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	1.07
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.006
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	149
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.33
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	0.7
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.9
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.54
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	0.65
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0

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NDWQS National Drinking Water Quality Standards WHO World Health Organization

N D Not Detected

Signature of Analyst: *Signature of Chief Chemist*

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-2 (Ghanol)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates;**	Spring Water (Nullah Water) 34.619367, 73.417288	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.6
2.	Temperature	—	°C	---	---	18
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	13
5.	Turbidity	APHA-2130 B	NTU	<5	<5	7
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	549
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	------	<500	327
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	9.81
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	2.61
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.008
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	106
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.32
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	0.2
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.4
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.52
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	4.73
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	17
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	29

NDWQS National Drinking Water Quality Standards WHO World Health Organization
N D Not Detected

Signature of Analyst: Signature of Chief Chemist

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-2 (Ghanol)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates;**	Tap Water (End User) 34.620250, 73.417595	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.5
2.	Temperature	—	°C	—	—	18
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	11
5.	Turbidity	APHA-2130 B	NTU	<5	<5	4
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	532
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	——	<500	319
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	9.54
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	2.38
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.008
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	109
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.36
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	0.2
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.38
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.5
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	4.7
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	16
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	28

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NDWQS National Drinking Water Quality Standards **WHO** World Health Organization
N D Not Detected

Signature of Analyst *Signature of Chief Chemist*

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-3 (Kholian)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates;**	Spring Water (Source) 34.605195, 73.394487	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	--	6.5-8.5	6.5-8.5	7.4
2.	Temperature	---	°C	---	---	14
3.	Taste & Odor	In-house	--	Non-Objectionable	Non Objectionable	Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	11
5.	Turbidity	APHA-2130 B	NTU	<5	<5	6
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	613
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	-------	<500	449
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	8.64
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	2.18
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.009
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	73
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.21
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.2
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.9
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.2
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	3.22
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	16
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	

NDWQS National Drinking Water Quality Standards **WHO** World Health Organization
N D Not Detected

Integrated Environment Laboratory

Signature of Analyst: *Signature of Chief Chemist*

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-3 (Kholian)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates;**	Pipe Water (End User) 34.608942, 73.383133	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.5
2.	Temperature	—	°C	—	—	16
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	9
5.	Turbidity	APHA-2130 B	NTU	<5	<5	4
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	597
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	------	<500	421
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	8.57
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	2.14
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.007
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	69
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.2
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.04
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.76
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.18
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	3.19
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	12
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	20

NDWQS National Drinking Water Quality Standards **WHO** World Health Organization
N D Not Detected

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	Client Name	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	Sampling Location:	Powerhouse (Barkot)
Sampling Date:	04-10-2025	Reporting Date:	13-10-2025
Source: GPS Coordinates;	Bottled Water 34.603747, 73.379525	Analysis Method	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	--	6.5-8.5	6.5-8.5	7.2
2.	Temperature	---	°C	---	---	14
3.	Taste & Odor	In-house	--	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	7
5.	Turbidity	APHA-2130 B	NTU	<5	<5	4
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	269
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	------	<500	143
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	4.05
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	1.26
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.006
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	151
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.37
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	0.5
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.5
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	1.91
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	1.60
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	

NDWQS National Drinking Water Quality Standards WHO World Health Organization
N D Not Detected

Signature of Analyst: Signature of Chief Chemist

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	GRC Camp Office (Sanghar)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates;**	Spring Water (Source) 34.584928, 73.376913	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	--	6.5-8.5	6.5-8.5	7.8
2.	Temperature	---	°C	---	----	17
3.	Taste & Odor	In-house	--	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	9
5.	Turbidity	APHA-2130 B	NTU	<5	<5	1
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	383
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	-------	<500	370
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	2.45
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	1.82
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.006
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	144
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.83
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.4
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.1
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	1.55
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	1.10
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0

NDWQS National Drinking Water Quality Standards **WHO** World Health Organization
N D Not Detected

Signature of Analyst: ***Signature of Chief Chemist***

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	GRC Camp Office (Sanghar)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates;**	Tap Water (End User) 34.584478, 73.373817	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	--	6.5-8.5	6.5-8.5	7.9
2.	Temperature	---	°C	---	----	16
3.	Taste & Odor	In-house	--	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	13
5.	Turbidity	APHA-2130 B	NTU	<5	<5	4
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	394
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	-------	<500	269
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	8.53
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	2.35
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.006
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	156
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.54
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	0.7
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.3
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.99
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	0.85
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0

NDWQS National Drinking Water Quality Standards **WHO** World Health Organization
N D Not Detected

Signature of Analyst *Signature of Chief Chemist*

Integrated Environment Laboratory

FOR ENVIRONMENTAL MONITORING, ANALYSIS & SURVEYS

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Surface Water Monitoring Results (Third Quarter, 2025)

Integrated Environment Laboratory

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SURFACE WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	Client Name	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	Sampling Location:	Dam Site (Paras Valley)
Sampling Date:	04-10-2025	Reporting Date:	13-10-2025
Source: GPS Coordinates	Kunhar River 34.660247, 73.451592	Analysis Method	APHA/USEPA Standard Methods

Sr. No	Parameters	Analysis Method	Units	NEQS	Results
1)	Temperature	----	°C	40	18
2)	pH	APHA-4500H+ B	–	6-9	7.9
3)	Chemical Oxygen Demand (COD)	APHA-5220-D	mg/l	150	87.8
4)	Biological Oxygen Demand (BOD5) at 20 °C	APHA, 5210	mg/l	80	54.38
5)	Total Dissolved Solids (TDS)	APHA-2540 C	mg/l	3500	1379
6)	Total Suspended Solids (TSS)	APHA-2540 D	mg/l	200	124
7)	Total Hardness	APHA-2340 C	mg/l	–	91
8)	Oil & Grease	Separation Method	mg/l	10	6.45
9)	Chromium (Hexa & Trivalent)	APHA-3500Cr B	mg/l	1.0	0.05
10)	Total Iron	APHA-3500-Fe-B	mg/l	8.0	5.84
11)	Chloride	APHA-4500Cl- B	mg/l	1000	119
12)	Flouride	APHA-4500F- C	mg/l	10	3.63
13)	Ammonia	ASTM-D1426-15	mg/l	40	18.04
14)	Cadmium	APHA-3500 Cd-B	mg/l	0.1	0
15)	Lead	APHA-3500-Pb B	mg/l	0.5	N.D
16)	Arsenic	APHA-3500As B	mg/l	1.0	N.D
17)	Copper	APHA-3500Cu B	mg/l	1.0	N.D
18)	Barium	APHA-3500Ba B	mg/l	1.5	0.06
19)	Selenium	APHA- 3500 Se C	mg/l	0.5	N.D
20)	Silver	APHA-3500Ag-B	mg/l	1.0	N.D
21)	Manganese	APHA-3500-Mn B	mg/l	1.5	0.7
22)	Zinc	APHA-3500-Zn B	mg/l	5.0	0.57
23)	Nickel	ASTM E3047-16	mg/l	1.0	0.8
24)	Boron	APHA-4500B-C	mg/l	6.0	N.D
25)	Mercury	APHA-3500 Hg-B	mg/l	0.01	N.D
26)	Sulphide (S^{-2})	APHA-4500 S_2	mg/l	1.0	0.54
27)	Sulphate (SO_4)	APHA-4500-SO_4 C	mg/l	600	417
28)	An Ionic Detergent (as MBAS)	----	mg/l	20	2.83
29)	Phenolic Compound (as Phenol)	APHA-5530-D	mg/l	0.1	0.4
30)	Cyanide (as CN) total	APHA 4500-CN	mg/l	1.0	N.D
31)	E-Coli	APHA:9222 D	Number/100 mL	—	Uncountable
32)	Total Coliform	APHA:9222 B	Number/100 mL	—	Uncountable

NEQS: National Environmental Quality Standards for Liquid Effluents N.D: Not Detected

Signature of Analyst: Signature of Chief Chemist

Integrated Environment Laboratory

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SURFACE WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Tailrace Upstream (Barkot)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates**	Kunhar River 34.5971541, 73.3700751	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No	Parameters	Analysis Method	Units	NEQS	Results
1)	Temperature	----	°C	40	14
2)	pH	APHA-4500H+ B	--	6-9	7.3
3)	Chemical Oxygen Demand (COD)	APHA-5220-D	mg/l	150	80.9
4)	Biological Oxygen Demand (BOD5) at 20 °C	APHA, 5210	mg/l	80	39.67
5)	Total Dissolved Solids (TDS)	APHA-2540 C	mg/l	3500	1219
6)	Total Suspended Solids (TSS)	APHA-2540 D	mg/l	200	107
7)	Total Hardness	APHA-2340 C	mg/l	--	99
8)	Oil & Grease	Separation Method	mg/l	10	3.38
9)	Chromium (Hexa & Trivalent)	APHA-3500Cr B	mg/l	1.0	0.9
10)	Total Iron	APHA-3500-Fe-B	mg/l	8.0	5.42
11)	Chloride	APHA-4500Cl- B	mg/l	1000	163
12)	Flouride	APHA-4500F- C	mg/l	10	7.3
13)	Ammonia	ASTM-D1426-15	mg/l	40	1.04
14)	Cadmium	APHA-3500 Cd-B	mg/l	0.1	0
15)	Lead	APHA-3500-Pb B	mg/l	0.5	N.D
16)	Arsenic	APHA-3500As B	mg/l	1.0	N.D
17)	Copper	APHA-3500Cu B	mg/l	1.0	N.D
18)	Barium	APHA-3500Ba B	mg/l	1.5	0.61
19)	Selenium	APHA- 3500 Se C	mg/l	0.5	N.D
20)	Silver	APHA-3500Ag-B	mg/l	1.0	N.D
21)	Manganese	APHA-3500-Mn B	mg/l	1.5	0.13
22)	Zinc	APHA-3500-Zn B	mg/l	5.0	0.57
23)	Nickel	ASTM E3047-16	mg/l	1.0	0.18
24)	Boron	APHA-4500B-C	mg/l	6.0	N.D
25)	Mercury	APHA-3500 Hg-B	mg/l	0.01	N.D
26)	Sulphide (S^{-2})	APHA-4500 S_2	mg/l	1.0	0.82
27)	Sulphate (SO_4)	APHA-4500-SO_4 C	mg/l	600	382
28)	An Ionic Detergent (as MBAS)	----	mg/l	20	14.6
29)	Phenolic Compound (as Phenol)	APHA-5530-D	mg/l	0.1	0.02
30)	Cyanide (as CN) total	APHA 4500-CN	mg/l	1.0	N.D
31)	E-Coli	APHA:9222 D	Number/100 mL	---	Uncountable
32)	Total Coliform	APHA:9222 B	Number/100 mL	---	Uncountable

NEQS: National Environmental Quality Standards for Liquid Effluents N.D: Not Detected

Integrated Environmental Laboratory

Signature of Analyst: *Signature of Chief Chemist*

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SURFACE WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Colony Area (Sanghar)
Sampling Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source: **GPS Coordinates**	Kunhar River 34.586503, 73.363695	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No	Parameters	Analysis Method	Units	NEQS	Results
1)	Temperature	-----	°C	40	14
2)	pH	APHA-4500H+ B	--	6-9	7.3
3)	Chemical Oxygen Demand (COD)	APHA-5220-D	mg/l	150	81.6
4)	Biological Oxygen Demand (BOD5) at 20 °C	APHA, 5210	mg/l	80	41.15
5)	Total Dissolved Solids (TDS)	APHA-2540 C	mg/l	3500	1231
6)	Total Suspended Solids (TSS)	APHA-2540 D	mg/l	200	105
7)	Total Hardness	APHA-2340 C	mg/l	--	103
8)	Oil & Grease	Separation Method	mg/l	10	3.41
9)	Chromium (Hexa & Trivalent)	APHA-3500Cr B	mg/l	1.0	0.92
10)	Total Iron	APHA-3500-Fe-B	mg/l	8.0	5.46
11)	Chloride	APHA-4500Cl- B	mg/l	1000	168
12)	Flouride	APHA-4500F- C	mg/l	10	7.33
13)	Ammonia	ASTM-D1426-15	mg/l	40	1.06
14)	Cadmium	APHA-3500 Cd-B	mg/l	0.1	0
15)	Lead	APHA-3500-Pb B	mg/l	0.5	N.D
16)	Arsenic	APHA-3500As B	mg/l	1.0	N.D
17)	Copper	APHA-3500Cu B	mg/l	1.0	N.D
18)	Barium	APHA-3500Ba B	mg/l	1.5	0.60
19)	Selenium	APHA- 3500 Se C	mg/l	0.5	N.D
20)	Silver	APHA-3500Ag-B	mg/l	1.0	N.D
21)	Manganese	APHA-3500-Mn B	mg/l	1.5	0.1
22)	Zinc	APHA-3500-Zn B	mg/l	5.0	0.57
23)	Nickel	ASTM E3047-16	mg/l	1.0	0.2
24)	Boron	APHA-4500B-C	mg/l	6.0	N.D
25)	Mercury	APHA-3500 Hg-B	mg/l	0.01	N.D
26)	Sulphide (S^{-2})	APHA-4500 S_2	mg/l	1.0	0.84
27)	Sulphate (SO_4)	APHA-4500-SO_4 C	mg/l	600	375
28)	An Ionic Detergent (as MBAS)	----	mg/l	20	14.42
29)	Phenolic Compound (as Phenol)	APHA-5530-D	mg/l	0.1	0.02
30)	Cyanide (as CN) total	APHA 4500-CN	mg/l	1.0	N.D
31)	E-Coli	APHA:9222 D	Number/100 mL	---	Uncountable
32)	Total Coliform	APHA:9222 B	Number/100 mL	---	Uncountable

NEQS: National Environmental Quality Standards for Liquid Effluents N.D: Not Detected

Signature of Analyst *Signature of Chief Chemist*

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Soil Analysis Results (Third Quarter, 2025)

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SOIL ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location :**	Adit-1 (Thobi)
Monitoring Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source:	Soil Sample		

Sr. No.	Parameters		Results
1	Soil Texture	Sand %	20
		Silt%	55
		Clay %	25
		Texture Class	Silty Clay Loam
2	pH		8.1
3	Electrical Conductivity EC (μSm^{-1})		236
4	Phosphorus ($mgkg^{-1}$)		3.81
5	Sodium Absorption Ratio		3.64

μSm^{-1}: Micro siemens/meter
$mgkg^{-1}$: milligram per Kilogram

Signature of Analyst:

Signature of Chief Chemist

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SOIL ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location :**	Adil-2 (Ghanol)
Monitoring Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source:	Soil Sample		

Sr. No.	Parameters		Results
1	Soil Texture	Sand %	23
		Silt%	47
		Clay %	30
		Texture Class	Silty Clay Loam
2	pH		7.8
3	Electrical Conductivity EC (μSm^{-1})		259
4	Phosphorus ($mgkg^{-1}$)		2.42
5	Sodium Absorption Ratio		3.97

μSm^{-1}: micro siemens/meter
$mgkg^{-1}$: milligram per Kilogram

Signature of Analyst:

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SOIL ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	Client Name	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	Sampling Location :	Adit-3 (Kholian)
Monitoring Date:	04-10-2025	Reporting Date:	13-10-2025
Source:	Soil Sample		

Sr. No.	Parameters		Results
1	Soil Texture	Sand %	25
		Silt%	49
		Clay %	26
		Texture Class	Silty Clay Loam
2	pH		8.4
3	Electrical Conductivity EC (μSm^{-1})		273
4	Phosphorus ($mgkg^{-1}$)		2.34
5	Sodium Absorption Ratio		3.07

μSm^{-1}: micro siemens/meter
$mgkg^{-1}$: milligram per Kilogram

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SOIL ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location :**	Powerhouse (Barkot)
Monitoring Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source:	Soil Sample		

Sr. No.	Parameters		Results
1	Soil Texture	Sand %	24
		Silt%	51
		Clay %	25
		Texture Class	Silty Clay Loam
2	pH		8.0
3	Electrical Conductivity EC (μSm^{-1})		262
4	Phosphorus ($mgkg^{-1}$)		3.06
5	Sodium Absorption Ratio		3.48

μSm^{-1}: micro siemens/meter
$mgkg^{-1}$: milligram per Kilogram

Signature of Analyst:

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SOIL ANALYSIS REPORT

Reference Number	BHPP/ENV/192-2025	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location :**	GRC Camp Office (Sanghar)
Monitoring Date:	04-10-2025	**Reporting Date:**	13-10-2025
Source:	Soil Sample		

Sr. No.	Parameters		Results
1	Soil Texture	Sand %	27
		Silt%	52
		Clay %	21
		Texture Class	Silty Clay Loam
2	pH		7.9
3	Electrical Conductivity EC (μSm^{-1})		245
4	Phosphorus ($mgkg^{-1}$)		1.98
5	Sodium Absorption Ratio		3.96

μSm^{-1}: Micro siemens/meter
$mgkg^{-1}$: milligram per Kilogram

Signature of Analyst:

Signature of Chief Chemist

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Ambient Air Monitoring Results (Fourth Quarter, 2025) Particulate Matters

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Dam Site (Paras Valley)
Monitoring Date:	21-12-2025	**Reporting Date:**	02-01-2026
Source:	Ambient Air	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.660470, 73.455497		

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.6}$	PM_{10}		
		Units		$PM_{2.6}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	09:00 A.M	22.08	22.86		
2.	10:00 A.M	10.82	21.00		
3.	11:00 A.M	21.21	24.70		
4.	12:00 P.M	16.10	23.07		
5.	01:00 P.M	9.41	20.43		
6.	02:00 P.M	13.64	22.42		
7.	03:00 P.M	17.75	24.63		
8.	04:00 P.M	14.93	18.60		
9.	05:00 P.M	20.03	23.60		
10.	06:00 P.M	17.11	20.08		
11.	07:00 P.M	19.60	26.00		
12.	08:00 P.M	13.90	20.80	16.33 ($\mu g/m^3$)	23.12 ($\mu g/m^3$)
13.	09:00 P M	9.15	26.81		
14.	10:00 P M	16.36	25.90		
15.	11:00 P M	14.52	28.42		
16.	12:00 A M	13.91	18.99		
17.	01:00 A M	18.53	25.14		
18.	02:00 A M	14.29	26.92		
19.	03:00 A M	16.93	27.95		
20.	04:00 A M	19.56	21.19		
21.	05:00 A M	18.11	19.33		
22.	06:00 A M	20.32	24.75		
23.	07:00 A M	14.63	18.65		
24.	08:00 A M	14.15	22.77		
NEQSAA				35($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

- Selected measurement units were $\mu g/m^3$ otherwise stated.
- The client is responsible lawful usage of reported data in future.
- The report is not valid for court.

Integrated Environment Laboratory

Signature of Analyst: *Signature of Chief Chemist*

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-1 (Thobi)
Monitoring Date:	24-12-2025	**Reporting Date:**	02-01-2026
Source:	Ambient Air	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.636125, 73.428597		

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	09:00 A.M	19.41	28.62	17.33 ($\mu g/m^3$)	28.41 ($\mu g/m^3$)
2.	10:00 A.M	19.50	27.28		
3.	11:00 A.M	19.76	28.17		
4.	12:00 P.M	15.14	33.65		
5.	01:00 P.M	18.63	29.01		
6.	02:00 P.M	17.49	29.42		
7.	03:00 P.M	15.75	33.42		
8.	04:00 P.M	16.53	27.16		
9.	05:00 P.M	15.04	26.36		
10.	06:00 P.M	17.20	28.02		
11.	07:00 P.M	14.97	32.17		
12.	08:00 P.M	15.80	31.74		
13.	09:00 P M	15.38	27.41		
14.	10:00 P M	16.07	28.21		
15.	11:00 P M	18.38	24.45		
16.	12:00 A M	18.78	26.34		
17.	01:00 A M	16.07	30.10		
18.	02:00 A M	17.27	22.11		
19.	03:00 A M	18.14	33.16		
20.	04:00 A M	18.67	31.02		
21.	05:00 A M	18.82	22.38		
22.	06:00 A M	19.04	26.55		
23.	07:00 A M	18.95	32.17		
24.	08:00 A M	15.13	22.95		
NEQSAA				35($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

- Selected measurement units were $\mu g/m^3$ otherwise stated.
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Integrated Environment Laboratory

Signature of Analyst: ***Signature of Chief Chemist***

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-2 (Ghanool)
Monitoring Date:	21-12-2025	**Reporting Date:**	02-01-2026
Source:	Ambient Air	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.619787, 73.417525		

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	10:00 A.M	15.94	22.77		
2.	11:00 A.M	11.05	23.20		
3.	12:00 P.M	19.79	25.59		
4.	01:00 P.M	9.23	28.83		
5.	02:00 P.M	9.83	20.67		
6.	03:00 P.M	9.93	29.08		
7.	04:00 P.M	20.67	27.57		
8.	05:00 P.M	15.67	25.34		
9.	06:00 P.M	14.99	18.05		
10.	07:00 P.M	9.81	19.73		
11.	08:00 P.M	15.58	24.37		
12.	09:00 P M	18.12	28.43	15.33 ($\mu g/m^3$)	23.49 ($\mu g/m^3$)
13.	10:00 P M	22.46	19.44		
14.	11:00 P M	22.42	18.91		
15.	12:00 A M	11.03	25.87		
16.	01:00 A M	12.19	26.18		
17.	02:00 A M	17.26	24.05		
18.	03:00 A M	19.32	18.97		
19.	04:00 A M	16.13	19.56		
20.	05:00 A M	13.08	29.80		
21.	06:00 A M	12.30	19.60		
22.	07:00 A M	15.07	25.19		
23.	08:00 A M	22.85	20.97		
24.	09:00 A M	13.25	21.52		
NEQSAA				35 ($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-3 (Kholian)
Monitoring Date:	22-12-2025	**Reporting Date:**	02-01-2026
Source:	Ambient Air	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.610253,73.389367		

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	09:00 A.M	14.00	29.50		
2.	10:00 A.M	16.94	28.37		
3.	11:00 A.M	15.20	20.17		
4.	12:00 P.M	14.62	25.47		
5.	01:00 P.M	15.37	29.85		
6.	02:00 P.M	19.70	18.65		
7.	03:00 P.M	20.01	19.05		
8.	04:00 P.M	21.47	20.98		
9.	05:00 P.M	10.18	28.87		
10.	06:00 P.M	15.85	24.79		
11.	07:00 P.M	20.52	22.65		
12.	08:00 P.M	16.12	23.71	17.18 ($\mu g/m^3$)	24.87 ($\mu g/m^3$)
13.	09:00 P M	15.69	27.53		
14.	10:00 P M	22.01	24.01		
15.	11:00 P M	16.88	28.24		
16.	12:00 A M	19.67	27.55		
17.	01:00 A M	15.68	27.98		
18.	02:00 A M	21.72	25.39		
19.	03:00 A M	18.27	24.64		
20.	04:00 A M	17.73	19.56		
21.	05:00 A M	16.66	19.78		
22.	06:00 A M	17.35	24.68		
23.	07:00 A M	15.85	25.67		
24.	08:00 A M	14.84	29.87		
NEQSAA				35 ($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

- Selected measurement units were $\mu g/m^3$ otherwise stated.
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- The report is not valid for court.

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Powerhouse (Barkot)
Monitoring Date:	22-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Air 34.601812, 73.377145	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	(µg/m3)	(µg/m3)		
1.	10:00 A.M	17.71	26.03		
2.	11:00 A.M	22.13	22.37		
3.	12:00 P.M	9.10	22.34		
4.	01:00 P.M	19.16	28.96		
5.	02:00 P.M	15.58	24.29		
6.	03:00 P.M	20.37	18.34		
7.	04:00 P.M	21.40	20.31		
8.	05:00 P.M	19.00	26.67		
9.	06:00 P.M	21.31	19.86		
10.	07:00 P.M	10.17	26.43		
11.	08:00 P.M	21.27	24.09		
12.	09:00 P M	16.72	23.63	16.07 (µg/m³)	23.72 (µg/m³)
13.	10:00 P M	17.19	24.98		
14.	11:00 P M	10.89	22.60		
15.	12:00 A M	21.47	29.55		
16.	01:00 A M	13.68	29.32		
17.	02:00 A M	10.40	24.19		
18.	03:00 A M	16.10	20.68		
19.	04:00 A M	22.52	21.33		
20.	05:00 A M	11.72	21.91		
21.	06:00 A M	12.19	22.33		
22.	07:00 A M	12.89	20.45		
23.	08:00 A M	10.85	19.15		
24.	09:00 A M	11.83	29.44		
NEQSAA				35 (µg/m³)	150(µg/m³)
WHO				15 (µg/m³)	45 (µg/m³)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

- Selected measurement units were µg/m³ otherwise stated.
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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Tailrace Upstream (Barkot)
Monitoring Date:	23-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Air 34.596088, 73.374512	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	09:00 A.M	9.95	21.95		
2.	10:00 A.M	13.47	24.54		
3.	11:00 A.M	19.22	24.17		
4.	12:00 P.M	17.22	24.00		
5.	01:00 P.M	12.02	26.36		
6.	02:00 P.M	10.46	29.61		
7.	03:00 P.M	10.75	27.71		
8.	04:00 P.M	13.25	23.43		
9.	05:00 P.M	18.22	25.49		
10.	06:00 P.M	19.08	25.72		
11.	07:00 P.M	11.88	28.55		
12.	08:00 P.M	18.49	28.05	14.01 ($\mu g/m^3$)	24.05 ($\mu g/m^3$)
13.	09:00 P M	13.96	18.38		
14.	10:00 P M	13.45	25.49		
15.	11:00 P M	9.21	21.15		
16.	12:00 A M	14.76	21.55		
17.	01:00 A M	17.85	26.02		
18.	02:00 A M	21.01	23.56		
19.	03:00 A M	11.80	22.70		
20.	04:00 A M	15.16	19.26		
21.	05:00 A M	9.28	25.71		
22.	06:00 A M	13.16	19.66		
23.	07:00 A M	13.64	20.24		
24.	08:00 A M	9.06	23.89		
NEQSAA				35 ($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	GRC Camp Office (Sanghar)
Monitoring Date:	24-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Air 34.584562, 73.373878	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	10:00 A.M	16.16	32.88		
2.	11:00 A.M	14.26	26.50		
3.	12:00 P.M	18.73	22.75		
4.	01:00 P.M	14.54	25.66		
5.	02:00 P.M	18.52	24.51		
6.	03:00 P.M	17.08	23.41		
7.	04:00 P.M	19.35	32.69		
8.	05:00 P.M	14.49	22.63		
9.	06:00 P.M	14.78	21.30		
10.	07:00 P.M	16.21	27.26		
11.	08:00 P.M	14.83	24.99		
12.	09:00 P M	17.11	23.21		
13.	10:00 P M	15.25	23.33	16.52 ($\mu g/m^3$)	26.57 ($\mu g/m^3$)
14.	11:00 P M	14.59	24.91		
15.	12:00 A M	15.97	29.65		
16.	01:00 A M	16.89	29.25		
17.	02:00 A M	18.04	21.39		
18.	03:00 A M	17.35	28.80		
19.	04:00 A M	15.82	21.60		
20.	05:00 A M	15.73	33.66		
21.	06:00 A M	17.62	29.23		
22.	07:00 A M	19.40	23.49		
23.	08:00 A M	16.44	31.57		
24.	09:00 A M	17.22	33.11		
NEQSAA				35 ($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Colony Area (Sanghar)
Monitoring Date:	23-12-2025	**Reporting Date:**	02-01-2026
Source:	Ambient Air	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.587775, 73.366225		

Sr. No	Time	Parameters		Results (Average 24 Hrs)	
		$PM_{2.5}$	PM_{10}		
		Units		$PM_{2.5}$	PM_{10}
	Hours of Monitoring	($\mu g/m^3$)	($\mu g/m^3$)		
1.	10:00 A.M	19.90	28.54		
2.	11:00 A.M	14.16	22.70		
3.	12:00 P.M	18.94	29.60		
4.	01:00 P.M	17.30	27.95		
5.	02:00 P.M	18.03	26.03		
6.	03:00 P.M	16.33	21.15		
7.	04:00 P.M	18.89	21.51		
8.	05:00 P.M	16.60	23.56		
9.	06:00 P.M	18.25	28.18		
10.	07:00 P.M	15.13	26.85		
11.	08:00 P.M	16.45	31.19		
12.	09:00 P M	19.38	22.85	17.33 ($\mu g/m^3$)	26.72 ($\mu g/m^3$)
13.	10:00 P M	17.71	26.05		
14.	11:00 P M	18.79	30.36		
15.	12:00 A M	16.77	21.05		
16.	01:00 A M	19.64	28.59		
17.	02:00 A M	15.17	30.63		
18.	03:00 A M	16.29	22.53		
19.	04:00 A M	19.70	32.48		
20.	05:00 A M	18.74	24.90		
21.	06:00 A M	14.74	33.34		
22.	07:00 A M	16.07	21.45		
23.	08:00 A M	14.41	31.41		
24.	09:00 A M	18.59	28.40		
NEQSAA				35 ($\mu g/m^3$)	150($\mu g/m^3$)
WHO				15 ($\mu g/m^3$)	45 ($\mu g/m^3$)

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization
Note:

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Ambient Gaseous Monitoring Results (Fourth Quarter, 2025)

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Dam Site (Paras Valley)
Monitoring Date:	21-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Air Gases 34.660470, 73.455497	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	09:00 A.M	0.86	17.42	18.84	22.28
2.	10:00 A.M	0.61	17.70	20.51	19.14
3.	11:00 A.M	0.37	16.85	19.09	20.70
4.	12:00 P.M	0.66	15.89	19.87	22.47
5.	01:00 P.M	0.10	17.21	18.77	20.11
6.	02:00 P.M	0.59	14.32	18.65	21.72
7.	03:00 P.M	0.89	14.58	19.16	22.44
8.	04:00 P.M	0.81	15.34	20.97	19.19
9.	05:00 P.M	1.00	18.12	21.55	19.34
10.	06:00 P.M	0.65	15.36	20.20	19.95
11.	07:00 P.M	0.66	17.56	18.49	20.57
12.	08:00 P.M	0.99	14.37	19.82	21.01
13.	09:00 P M	0.64	15.88	19.39	21.52
14.	10:00 P M	0.55	16.58	18.96	20.31
15.	11:00 P M	0.61	17.61	19.81	19.39
16.	12:00 A M	0.12	17.35	18.86	21.36
17.	01:00 A M	0.98	14.66	19.13	21.46
18.	02:00 A M	0.06	18.47	20.04	19.92
19.	03:00 A M	0.66	15.35	19.42	19.33
20.	04:00 A M	0.61	14.95	21.11	20.17
21.	05:00 A M	0.58	14.57	20.00	21.63
22.	06:00 A M	0.36	14.12	21.98	19.56
23.	07:00 A M	1.00	16.93	20.87	22.50
24.	08:00 A M	0.77	15.09	20.36	21.92
Average Concentration		**0.63**	**16.09**	**19.83**	**20.75**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

- Selected measurement units were $\mu g/m^3$& mg/m^3 otherwise stated.
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- The report is not valid for court.

Signature of Analyst: *Signature of Chief Chemist*

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-1 (Thobi)
Monitoring Date:	24-12-2025	**Reporting Date:**	02-01-2026
Source:	Ambient Air Gases	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.636125, 73.428597		

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	09:00 A.M	0.39	12.93	16.38	18.57
2.	10:00 A.M	0.97	11.48	13.67	18.63
3.	11:00 A.M	0.62	16.12	10.75	18.88
4.	12:00 P.M	0.55	16.09	12.24	12.62
5.	01:00 P.M	0.43	16.27	16.76	12.89
6.	02:00 P.M	0.38	14.45	14.13	18.83
7.	03:00 P.M	0.74	16.42	10.33	15.15
8.	04:00 P.M	0.09	12.10	16.21	12.66
9.	05:00 P.M	0.90	10.78	16.62	15.49
10.	06:00 P.M	0.97	11.35	13.57	12.13
11.	07:00 P.M	0.26	11.88	13.53	13.06
12.	08:00 P.M	0.86	9.80	19.42	18.57
13.	09:00 P M	0.12	16.09	19.52	15.10
14.	10:00 P M	0.30	11.12	13.49	18.56
15.	11:00 P M	0.07	10.88	10.22	18.49
16.	12:00 A M	0.47	10.82	13.74	16.81
17.	01:00 A M	0.52	17.77	16.53	13.09
18.	02:00 A M	0.97	12.00	16.86	13.44
19.	03:00 A M	0.90	17.97	16.04	15.81
20.	04:00 A M	0.87	17.49	13.75	12.27
21.	05:00 A M	0.32	9.17	13.56	16.09
22.	06:00 A M	0.83	12.84	10.40	16.82
23.	07:00 A M	0.50	17.21	13.55	14.69
24.	08:00 A M	0.18	13.11	19.21	15.04
Average Concentration		**0.55**	**13.59**	**14.60**	**15.57**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

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Signature of Analyst: ***Signature of Chief Chemist***

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-2 (Ghanool)
Monitoring Date:	21-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Air Gases 34.619787, 73.417525	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	10:00 A.M	0.31	12.13	15.49	16.33
2.	11:00 A.M	0.21	11.07	14.20	13.02
3.	12:00 P.M	0.29	10.02	15.32	17.21
4.	01:00 P.M	0.01	10.73	14.32	15.85
5.	02:00 P.M	0.15	11.47	14.53	14.63
6.	03:00 P.M	0.70	14.76	16.91	18.03
7.	04:00 P.M	0.75	11.04	13.53	16.75
8.	05:00 P.M	0.30	14.05	16.69	16.10
9.	06:00 P.M	0.66	14.15	16.02	13.71
10.	07:00 P.M	0.47	11.19	16.70	17.96
11.	08:00 P.M	0.01	13.11	16.43	18.66
12.	09:00 P M	0.60	10.23	15.33	16.36
13.	10:00 P M	0.22	11.40	15.21	14.44
14.	11:00 P M	0.48	13.13	13.42	16.82
15.	12:00 A M	0.30	10.14	16.55	16.89
16.	01:00 A M	0.42	13.44	15.13	16.67
17.	02:00 A M	0.00	13.89	13.49	16.65
18.	03:00 A M	0.52	11.03	13.83	18.71
19.	04:00 A M	0.74	13.04	16.81	15.32
20.	05:00 A M	0.55	10.51	13.24	15.39
21.	06:00 A M	0.01	10.61	14.37	15.49
22.	07:00 A M	0.84	10.25	16.93	15.54
23.	08:00 A M	0.25	14.60	15.48	17.63
24.	09:00 A M	0.59	12.37	13.39	17.81
Average Concentration		**0.39**	**12.01**	**15.14**	**16.33**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

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WHO: World Health Organization

Note:

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-3 (Kholian)
Monitoring Date:	22-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Air Gases 34.610253,73.389367	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	09:00 A.M	0.43	10.90	12.36	10.07
2.	10:00 A.M	0.15	13.45	12.69	11.03
3.	11:00 A.M	0.74	12.45	14.24	9.28
4.	12:00 P.M	0.72	12.24	10.86	12.20
5.	01:00 P.M	0.46	10.08	12.44	15.02
6.	02:00 P.M	0.95	11.13	10.86	10.09
7.	03:00 P.M	0.92	9.25	14.02	14.26
8.	04:00 P.M	0.45	10.92	10.64	15.30
9.	05:00 P.M	0.20	13.67	11.47	9.43
10.	06:00 P.M	0.87	13.95	14.93	8.59
11.	07:00 P.M	0.21	10.44	10.49	11.03
12.	08:00 P.M	0.87	12.28	12.00	12.80
13.	09:00 P M	0.19	10.52	11.96	8.08
14.	10:00 P M	0.21	11.13	10.55	11.47
15.	11:00 P M	0.58	11.44	11.78	12.36
16.	12:00 A M	0.02	13.75	11.89	13.68
17.	01:00 A M	0.84	10.09	12.95	14.58
18.	02:00 A M	0.98	13.25	10.67	15.69
19.	03:00 A M	0.61	9.24	12.80	14.18
20.	04:00 A M	0.37	11.03	11.63	9.51
21.	05:00 A M	0.78	12.38	12.83	10.46
22.	06:00 A M	0.31	10.43	13.53	10.25
23.	07:00 A M	0.51	9.65	12.88	15.92
24.	08:00 A M	0.38	12.92	12.91	12.24
Average Concentration		**0.53**	**11.53**	**12.22**	**11.98**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

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Signature of Analyst:

Signature of Chief Chemist

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Powerhouse (Barkot)
Monitoring Date:	22-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Air Gases 34.601812, 73.377145	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	10:00 A.M	0.28	12.36	11.55	12.52
2.	11:00 A.M	0.04	9.46	14.83	10.49
3.	12:00 P.M	0.73	12.62	11.93	8.63
4.	01:00 P.M	0.14	13.07	14.27	9.22
5.	02:00 P.M	0.22	12.73	14.97	12.39
6.	03:00 P.M	0.66	11.92	10.13	9.16
7.	04:00 P.M	0.04	12.20	12.58	8.53
8.	05:00 P.M	0.45	11.94	14.75	14.75
9.	06:00 P.M	0.59	12.39	13.50	11.05
10.	07:00 P.M	0.70	11.57	13.36	11.78
11.	08:00 P.M	0.15	12.69	14.99	11.54
12.	09:00 P M	0.26	13.75	13.35	9.40
13.	10:00 P M	0.94	12.40	10.84	13.29
14.	11:00 P M	0.30	10.17	14.20	8.86
15.	12:00 A M	0.41	13.81	12.39	14.31
16.	01:00 A M	0.64	12.78	10.40	15.11
17.	02:00 A M	0.52	10.94	10.91	12.01
18.	03:00 A M	0.60	12.78	11.63	12.87
19.	04:00 A M	0.77	13.49	10.29	13.92
20.	05:00 A M	0.92	12.60	14.25	9.25
21.	06:00 A M	0.39	10.65	10.24	12.40
22.	07:00 A M	0.60	10.82	12.00	8.41
23.	08:00 A M	0.36	10.13	14.84	14.01
24.	09:00 A M	0.98	13.59	13.05	8.43
Average Concentration		**0.49**	**12.12**	**12.72**	**11.35**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

NEQSAA: National Environmental Quality Standards for Ambient Air
WHO: World Health Organization

Note:

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Tailrace Upstream (Barkot)
Monitoring Date:	23-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Air Gases 34.596088, 73.374512	**Monitoring Instrument:**	Aeroqual, AQMS 09

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	09:00 A.M	0.81	16.22	10.98	12.26
2.	10:00 A.M	0.24	13.56	16.85	15.83
3.	11:00 A.M	0.11	9.51	14.94	18.73
4.	12:00 P.M	0.59	14.95	19.92	13.59
5.	01:00 P.M	0.48	13.83	11.01	13.57
6.	02:00 P.M	0.90	14.35	17.76	17.49
7.	03:00 P.M	0.01	10.50	12.20	14.34
8.	04:00 P.M	0.98	9.28	13.68	12.62
9.	05:00 P.M	0.61	9.47	15.94	16.49
10.	06:00 P.M	0.04	13.86	14.02	18.35
11.	07:00 P.M	0.47	16.81	12.68	13.75
12.	08:00 P.M	0.47	11.54	10.84	12.75
13.	09:00 P M	0.71	14.18	19.07	13.56
14.	10:00 P M	0.45	15.74	15.21	18.40
15.	11:00 P M	0.79	16.04	16.18	13.30
16.	12:00 A M	0.87	17.44	16.78	12.11
17.	01:00 A M	0.21	15.69	10.53	15.71
18.	02:00 A M	0.51	15.41	10.89	14.38
19.	03:00 A M	0.69	12.59	17.47	15.44
20.	04:00 A M	0.68	14.36	14.20	12.37
21.	05:00 A M	0.39	16.52	19.20	17.59
22.	06:00 A M	0.98	17.52	18.36	16.84
23.	07:00 A M	0.58	12.07	18.32	17.12
24.	08:00 A M	0.12	15.09	16.10	12.30
Average Concentration		**0.53**	**14.02**	**15.13**	**14.95**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	GRC Camp Office (Sanghar)
Monitoring Date:	24-12-2025	**Reporting Date:**	02-01-2026
Source:	Ambient Air Gases	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.584562, 73.373878		

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	10:00 A.M	0.79	18.66	17.81	21.14
2.	11:00 A.M	0.43	19.24	17.05	16.35
3.	12:00 P.M	0.77	19.31	21.56	20.44
4.	01:00 P.M	0.73	13.16	20.03	22.60
5.	02:00 P.M	0.57	13.34	17.91	18.08
6.	03:00 P.M	0.92	12.56	20.97	17.20
7.	04:00 P.M	0.23	14.49	17.74	23.22
8.	05:00 P.M	0.20	15.45	16.77	22.48
9.	06:00 P.M	0.23	18.90	17.69	17.27
10.	07:00 P.M	0.81	13.59	18.94	20.20
11.	08:00 P.M	0.50	16.33	15.47	21.50
12.	09:00 P M	0.17	15.32	17.28	15.63
13.	10:00 P M	0.93	19.32	14.95	21.48
14.	11:00 P M	0.40	17.66	14.21	20.42
15.	12:00 A M	0.22	19.67	18.23	18.27
16.	01:00 A M	0.91	19.11	16.50	19.84
17.	02:00 A M	0.42	12.82	19.98	16.18
18.	03:00 A M	0.63	15.81	21.72	19.11
19.	04:00 A M	0.22	15.33	15.93	22.57
20.	05:00 A M	0.08	15.63	19.68	20.87
21.	06:00 A M	0.09	19.49	20.72	14.20
22.	07:00 A M	0.40	13.04	21.82	15.18
23.	08:00 A M	0.23	16.18	19.52	23.16
24.	09:00 A M	0.55	16.93	20.96	20.79
Average Concentration		**0.48**	**16.31**	**18.48**	**19.51**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

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AMBIENT GASES MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Colony Area (Sanghar)
Monitoring Date:	23-12-2025	**Reporting Date:**	02-01-2026
Source:	Ambient Air Gases	**Monitoring Instrument:**	Aeroqual, AQMS 09
GPS Coordinates:	34.587775, 73.366225		

Sr. No	Time	Parameters			
		CO	NO	NO_2	SO_2
		Units			
	Hours	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1.	10:00 A.M	0.03	14.44	14.46	16.83
2.	11:00 A.M	0.30	15.95	8.52	13.62
3.	12:00 P.M	0.42	14.26	12.41	13.95
4.	01:00 P.M	0.01	13.42	9.33	10.78
5.	02:00 P.M	0.31	12.74	8.56	10.31
6.	03:00 P.M	0.48	12.76	16.97	13.70
7.	04:00 P.M	0.31	14.98	8.13	17.61
8.	05:00 P.M	0.96	13.85	13.33	17.00
9.	06:00 P.M	0.33	13.42	9.13	14.90
10.	07:00 P.M	0.25	12.35	10.53	18.00
11.	08:00 P.M	0.69	12.03	10.53	18.44
12.	09:00 P M	0.07	12.44	13.52	12.40
13.	10:00 P M	0.20	12.20	14.99	13.81
14.	11:00 P M	0.40	15.82	9.12	11.06
15.	12:00 A M	0.34	14.31	14.73	17.62
16.	01:00 A M	0.69	15.43	9.24	16.39
17.	02:00 A M	0.19	14.87	10.61	14.25
18.	03:00 A M	0.58	15.55	14.61	10.87
19.	04:00 A M	0.78	15.57	12.96	13.13
20.	05:00 A M	0.84	15.88	15.67	11.19
21.	06:00 A M	0.70	15.18	14.74	17.69
22.	07:00 A M	0.07	14.36	13.95	12.80
23.	08:00 A M	0.24	13.93	8.94	12.59
24.	09:00 A M	0.43	14.82	15.76	13.65
Average Concentration		**0.40**	**14.19**	**12.11**	**14.27**
NEQSAA		**05**	**40**	**80**	**120**
WHO		**04**	**---**	**25**	**40**

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WHO: World Health Organization

Note:

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Ambient Noise Level Monitoring Results (Fourth Quarter, 2025)

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Dam Site (Paras Valley)
Monitoring Date:	21-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Noise 34.660470, 73.455497	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	09:00 A.M	dB(A)	55.1	60.1	57.6
2.	10:00 A.M		48.9	56.7	52.8
3.	11:00 A.M		52.0	58.1	55.1
4.	12:00 P.M		46.3	59.1	52.7
5.	01:00 P.M		49.3	61.0	55.2
6.	02:00 P.M		52.7	59.6	56.2
7.	03:00 P.M		52.1	69.6	60.9
8.	04:00 P.M		52.4	67.9	60.1
9.	05:00 P.M		45.2	59.2	52.2
10.	06:00 P.M		54.3	67.9	61.1
11.	07:00 P.M		49.8	60.3	55.1
12.	08:00 P.M		54.9	63.4	59.1
13.	09:00 P M		53.5	68.8	61.2
14.	10:00 P M		51.8	57.6	54.7
15.	11:00 P M		53.3	66.8	60.0
16.	12:00 A M		52.5	57.6	55.0
17.	01:00 A M		50.4	58.0	54.2
18.	02:00 A M		54.7	60.7	57.7
19.	03:00 A M		55.3	55.8	55.6
20.	04:00 A M		48.3	64.4	56.3
21.	05:00 A M		52.3	66.5	59.4
22.	06:00 A M		53.3	59.2	56.3
23.	07:00 A M		49.3	68.5	58.9
24.	08:00 A M		50.2	64.7	57.5

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

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Signature of Analyst: *Signature of Chief Chemist*

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-1 (Thobi)
Monitoring Date:	24-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Noise 34.636125, 73.428597	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	09:00 A.M	dB(A)	50.1	56.1	53.1
2.	10:00 A.M		48.8	73.9	61.4
3.	11:00 A.M		53.3	58.8	56.0
4.	12:00 P.M		56.5	60.2	58.3
5.	01:00 P.M		55.2	65.7	60.4
6.	02:00 P.M		52.2	63.5	57.8
7.	03:00 P.M		52.3	58.0	55.2
8.	04:00 P.M		55.5	61.3	58.4
9.	05:00 P.M		55.7	60.8	58.2
10.	06:00 P.M		48.2	72.4	60.3
11.	07:00 P.M		52.2	74.6	63.4
12.	08:00 P.M		51.5	73.8	62.6
13.	09:00 P M		47.5	66.8	57.1
14.	10:00 P M		56.1	66.3	61.2
15.	11:00 P M		55.6	73.3	64.4
16.	12:00 A M		47.8	60.4	54.1
17.	01:00 A M		48.8	57.3	53.0
18.	02:00 A M		48.4	72.9	60.7
19.	03:00 A M		48.8	73.6	61.2
20.	04:00 A M		56.3	75.1	65.7
21.	05:00 A M		47.5	68.6	58.1
22.	06:00 A M		56.3	74.6	65.4
23.	07:00 A M		50.1	65.0	57.6
24.	08:00 A M		49.4	75.8	62.6

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

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Signature of Analyst: ***Signature of Chief Chemist***

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-2 (Ghanool)
Monitoring Date:	21-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Noise 34.619787, 73.417525	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	10:00 A.M	dB(A)	45.6	55.5	50.5
2.	11:00 A.M		53.4	68.4	60.9
3.	12:00 P.M		45.8	63.0	54.4
4.	01:00 P.M		48.6	70.3	59.5
5.	02:00 P.M		51.6	61.6	56.6
6.	03:00 P.M		47.5	63.6	55.5
7.	04:00 P.M		53.8	68.6	61.2
8.	05:00 P.M		45.7	68.6	57.2
9.	06:00 P.M		51.1	67.4	59.2
10.	07:00 P.M		53.7	70.2	62.0
11.	08:00 P.M		50.9	70.1	60.5
12.	09:00 P M		46.9	65.7	56.3
13.	10:00 P M		46.3	60.5	53.4
14.	11:00 P M		52.7	68.6	60.6
15.	12:00 A M		50.3	70.4	60.4
16.	01:00 A M		45.6	61.4	53.5
17.	02:00 A M		52.8	58.0	55.4
18.	03:00 A M		47.3	60.4	53.8
19.	04:00 A M		49.1	70.6	59.9
20.	05:00 A M		55.4	61.0	58.2
21.	06:00 A M		45.4	59.6	52.5
22.	07:00 A M		47.7	62.0	54.8
23.	08:00 A M		45.1	70.9	58.0
24.	09:00 A M		51.0	59.7	55.4

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Adit-3 (Kholian)
Monitoring Date:	22-12-2025	**Reporting Date:**	02-01-2026
Source:	Ambient Noise	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2
GPS Coordinates:	34.610253,73.389367		

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	09:00 A.M	dB(A)	48.5	57.0	52.8
2.	10:00 A.M		48.7	56.5	52.6
3.	11:00 A.M		49.0	59.2	54.1
4.	12:00 P.M		50.1	70.4	60.2
5.	01:00 P.M		55.2	70.0	62.6
6.	02:00 P.M		48.0	61.4	54.7
7.	03:00 P.M		50.7	64.9	57.8
8.	04:00 P.M		46.4	62.3	54.3
9.	05:00 P.M		53.5	62.7	58.1
10.	06:00 P.M		54.6	60.3	57.5
11.	07:00 P.M		50.5	59.4	54.9
12.	08:00 P.M		55.5	57.9	56.7
13.	09:00 P M		51.5	64.5	58.0
14.	10:00 P M		52.9	62.0	57.4
15.	11:00 P M		48.8	67.2	58.0
16.	12:00 A M		50.9	64.3	57.6
17.	01:00 A M		51.5	68.0	59.7
18.	02:00 A M		56.0	67.0	61.5
19.	03:00 A M		50.4	62.9	56.7
20.	04:00 A M		55.9	71.0	63.5
21.	05:00 A M		46.3	63.0	54.7
22.	06:00 A M		54.6	57.8	56.2
23.	07:00 A M		53.8	57.5	55.6
24.	08:00 A M		53.1	61.5	57.3

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

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Signature of Analyst: *Signature of Chief Chemist*

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Powerhouse (Barkot)
Monitoring Date:	22-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Noise 34.601812, 73.377145	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	10:00 A.M	dB(A)	53.4	68.9	61.2
2.	11:00 A.M		48.4	62.7	55.6
3.	12:00 P.M		46.0	58.9	52.5
4.	01:00 P.M		49.9	61.3	55.6
5.	02:00 P.M		53.4	70.4	61.9
6.	03:00 P.M		48.0	70.2	59.1
7.	04:00 P.M		54.0	61.2	57.6
8.	05:00 P.M		55.6	69.6	62.6
9.	06:00 P.M		48.0	65.0	56.5
10.	07:00 P.M		51.0	70.1	60.6
11.	08:00 P.M		46.4	66.3	56.3
12.	09:00 P M		47.9	60.1	54.0
13.	10:00 P M		53.5	68.7	61.1
14.	11:00 P M		55.2	69.4	62.3
15.	12:00 A M		45.9	69.8	57.8
16.	01:00 A M		46.4	61.2	53.8
17.	02:00 A M		55.4	62.6	59.0
18.	03:00 A M		53.5	69.3	61.4
19.	04:00 A M		48.9	56.3	52.6
20.	05:00 A M		51.5	62.3	56.9
21.	06:00 A M		51.4	63.0	57.2
22.	07:00 A M		54.3	55.3	54.8
23.	08:00 A M		53.5	56.1	54.8
24.	09:00 A M		50.3	62.5	56.4

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

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Signature of Analyst:

Signature of Chief Chemist

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Tailrace Upstream (Barkot)
Monitoring Date:	23-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Noise 34.596088, 73.374512	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	09:00 A.M	dB(A)	52.3	59.8	56.0
2.	10:00 A.M		47.8	59.5	53.7
3.	11:00 A.M		50.5	57.8	54.1
4.	12:00 P.M		49.9	64.9	57.4
5.	01:00 P.M		52.6	68.1	60.3
6.	02:00 P.M		45.8	67.3	56.6
7.	03:00 P.M		55.0	62.7	58.9
8.	04:00 P.M		47.7	63.8	55.8
9.	05:00 P.M		45.4	56.9	51.2
10.	06:00 P.M		52.4	56.3	54.4
11.	07:00 P.M		54.0	57.3	55.7
12.	08:00 P.M		50.8	67.5	59.2
13.	09:00 P M		50.0	66.1	58.1
14.	10:00 P M		51.2	55.1	53.1
15.	11:00 P M		55.4	69.5	62.5
16.	12:00 A M		49.9	57.8	53.9
17.	01:00 A M		47.7	65.0	56.4
18.	02:00 A M		48.0	56.3	52.2
19.	03:00 A M		46.6	64.2	55.4
20.	04:00 A M		52.8	62.0	57.4
21.	05:00 A M		54.4	69.5	62.0
22.	06:00 A M		47.4	62.2	54.8
23.	07:00 A M		51.1	70.0	60.5
24.	08:00 A M		45.1	55.5	50.3

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	GRC Camp Office (Sanghar)
Monitoring Date:	24-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates:**	Ambient Noise 34.584562, 73.373878	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	10:00 A.M	dB(A)	54.7	67.5	61.1
2.	11:00 A.M		54.1	60.1	57.1
3.	12:00 P.M		51.4	64.3	57.8
4.	01:00 P.M		55.5	64.0	59.8
5.	02:00 P.M		52.7	72.0	62.4
6.	03:00 P.M		53.1	60.4	56.7
7.	04:00 P.M		54.9	71.4	63.1
8.	05:00 P.M		53.9	56.1	55.0
9.	06:00 P.M		54.1	64.0	59.0
10.	07:00 P.M		48.7	70.4	59.5
11.	08:00 P.M		52.5	71.3	61.9
12.	09:00 P M		52.2	56.9	54.6
13.	10:00 P M		52.9	64.5	58.7
14.	11:00 P M		51.2	70.7	60.9
15.	12:00 A M		49.9	71.7	60.8
16.	01:00 A M		50.6	63.2	56.9
17.	02:00 A M		56.6	61.6	59.1
18.	03:00 A M		52.8	67.5	60.1
19.	04:00 A M		56.0	75.1	65.5
20.	05:00 A M		55.6	74.8	65.2
21.	06:00 A M		53.7	66.6	60.1
22.	07:00 A M		47.4	73.0	60.2
23.	08:00 A M		51.1	71.6	61.3
24.	09:00 A M		48.9	64.3	56.6

NEQS limit : 55-65 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

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AMBIENT NOISE MONITORING REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Monitoring Location:**	Colony Area (Sanghar)
Monitoring Date:	23-12-2025	**Reporting Date:**	02-01-2026
Source:	Ambient Noise	**Monitoring Instrument:**	Noise Meter-IEC651-Type-2
GPS Coordinates:	34.587775, 73.366225		

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	10:00 A.M	dB(A)	47.6	71.4	59.5
2.	11:00 A.M		51.9	56.5	54.2
3.	12:00 P.M		54.3	71.4	62.9
4.	01:00 P.M		47.5	73.1	60.3
5.	02:00 P.M		51.8	72.1	62.0
6.	03:00 P.M		53.6	65.4	59.5
7.	04:00 P.M		51.8	74.7	63.2
8.	05:00 P.M		49.2	57.3	53.2
9.	06:00 P.M		53.6	59.4	56.5
10.	07:00 P.M		53.5	67.5	60.5
11.	08:00 P.M		50.1	74.2	62.2
12.	09:00 P M		48.2	62.2	55.2
13.	10:00 P M		48.1	68.9	58.5
14.	11:00 P M		53.6	72.2	62.9
15.	12:00 A M		49.9	62.8	56.3
16.	01:00 A M		55.3	73.3	64.3
17.	02:00 A M		56.9	59.9	58.4
18.	03:00 A M		53.5	66.2	59.8
19.	04:00 A M		51.7	69.5	60.6
20.	05:00 A M		50.1	64.2	57.2
21.	06:00 A M		54.5	67.8	61.1
22.	07:00 A M		53.3	68.2	60.7
23.	08:00 A M		48.8	57.7	53.3
24.	09:00 A M		50.9	61.0	55.9

NEQS limit : 45-55 dB
WHO limit: 70 dB

NEQS: National Environmental Quality Standards **WHO:** World Health Organization
Leq: Log Equivalent Continuous Sound Level

Note:

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Drinking Water Monitoring Results (Fourth Quarter, 2025)

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Dam Site (Paras Valley)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates;**	Spring Water (Source) 34.653167, 73.445678	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.5
2.	Temperature	---	°C	---	---	16
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	4
5.	Turbidity	APHA-2130 B	NTU	<5	<5	3
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	295
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	-------	<500	443
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	1.63
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	2.83
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.008
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	112
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.91
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.4
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.3
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	1.61
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	1.63
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	

NDWQS National Drinking Water Quality Standards **WHO** World Health Organizati
N D Not Detected

Signature of Analyst: *Signature of Chief Chemist*

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Dam Site (Paras Valley)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates;**	Tap Water (End User) 34.660653, 73.455772	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.5
2.	Temperature	—	°C	—	—	16
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	6
5.	Turbidity	APHA-2130 B	NTU	<5	<5	4
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	232
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	——	<500	436
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	1.54
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	2.89
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.007
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	114
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.95
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.3
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.5
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	1.65
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	1.67
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0

NDWQS National Drinking Water Quality Standards **WHO** World Health Organization
N D Not Detected

Signature of Analyst: *Signature of Chief Chemist*

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-1 (Thobi)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates;**	Spring Water (Source) 34.636125, 73.428597	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.5
2.	Temperature	—	°C	—	—	17
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	6
5.	Turbidity	APHA-2130 B	NTU	<5	<5	1
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	254
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	------	<500	270
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	9.20
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	1.62
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.009
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	154
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.98
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.2
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.3
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	1.36
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	1.44
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0

NDWQS National Drinking Water Quality Standards WHO World Health Organization

N D Not Detected

Signature of Analyst: *Signature of Chief Chemist*

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-1 (Thobi)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates;**	Tap Water (End User) 34.636125, 73.428597	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.6
2.	Temperature	—	°C	—	—	18
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	7
5.	Turbidity	APHA-2130 B	NTU	<5	<5	2
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	263
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	------	<500	281
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	9.32
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	1.66
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.009
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	160
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.98
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.3
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.4
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	1.35
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	1.46
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0

NDWQS National Drinking Water Quality Standards **WHO** World Health Organization

N D Not Detected

Signature of Analyst:

Signature of Chief Chemist

Integrated Environment Laboratory

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-2 (Ghanol)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates;**	Spring Water 34.619367, 73.417288	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.5
2.	Temperature	---	°C	---	---	16
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	09
5.	Turbidity	APHA-2130 B	NTU	<5	<5	3
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	192
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	------	<500	141
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	6.28
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	1.12
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.004
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	89
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.18
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	0.11
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.09
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.2
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	3.1
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	

NDWQS National Drinking Water Quality Standards WHO World Health Organization
N D Not Detected

Signature of Analyst: Signature of Chief Chemist

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-2 (Ghanol)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates;**	Tap Water (End User) 34.620250, 73.417595	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.6
2.	Temperature	---	°C	---	---	17
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	10
5.	Turbidity	APHA-2130 B	NTU	<5	<5	3
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	183
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	------	<500	137
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	5.8
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	1.21
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.006
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	95
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.21
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	0.12
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.14
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.2
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	3.2
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0

NDWQS National Drinking Water Quality Standards WHO World Health Organiz...
N D Not Detected

Signature of Analyst: Signature of Chief Chemist

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-3 (Kholian)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates;**	Spring Water (Source) 34.605195, 73.394487	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	--	6.5-8.5	6.5-8.5	7.5
2.	Temperature	—	°C	—	—	16
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	8
5.	Turbidity	APHA-2130 B	NTU	<5	<5	4
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	373
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	——	<500	265
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	8.56
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	2.12
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.007
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	69
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.17
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.1
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.7
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.1
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	3.12
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	15
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	18

NDWQS National Drinking Water Quality Standards **WHO** World Health Organization
N D Not Detected

Signature of Analyst: *Signature of Chief Chemist*

Integrated Environment Laboratory

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Adit-3 (Kholian)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates;**	Pipe Water (End User) 34.608942, 73.383133	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.4
2.	Temperature	—	°C	—	—	17
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	10
5.	Turbidity	APHA-2130 B	NTU	<5	<5	4
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	361
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	——	<500	232
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	8.64
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	2.31
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.005
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	78
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.4
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.12
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.85
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	0.29
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	3.27
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	19
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	24

NDWQS National Drinking Water Quality Standards **WHO** World Health Organization
N D Not Detected

Integrated Environment Laboratory

Signature of Analyst: *Signature of Chief Chemist*

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Powerhouse (Barkot)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates;**	Water Cooler 34.603747, 73.379525	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
1.	pH	APHA-4500H+ B	–	6.5-8.5	6.5-8.5	7.4
2.	Temperature	---	°C	—	----	20
3.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Non Objectionable
4.	Color	APHA-2120 B/C	TCU	≤ 15	<15	14
5.	Turbidity	APHA-2130 B	NTU	<5	<5	3
6.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	314
7.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	------	<500	330
8.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	1.33
9.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	2.46
10.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
11.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.005
12.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
13.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	164
14.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.67
15.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
16.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.2
17.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
18.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
19.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
20.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.2
21.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
22.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	1.98
23.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	1.91
24.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
25.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
26.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
27.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
28.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
29.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0

NDWQS National Drinking Water Quality Standards **WHO** World Health Organization
N D Not Detected

Integrated Environmental Laboratory

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DRINKING WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Colony Area
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates;**	Water Cooler 34.587775 73.366225	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No.	Parameters	Standard Methods	Units	WHO	NDWQS	Results
30.	pH	APHA-4500H+ B	--	6.5-8.5	6.5-8.5	7.5
31.	Temperature	—	°C	---	—	17
32.	Taste & Odor	In-house	–	Non-Objectionable	Non Objectionable	Non Objectionable
33.	Color	APHA-2120 B/C	TCU	≤ 15	<15	6
34.	Turbidity	APHA-2130 B	NTU	<5	<5	3
35.	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	< 1000	<1000	243
36.	Total Hardness as $CaCO_3$	APHA-2340 C	mg/L	------	<500	198
37.	Nitrate (NO_3)	APHA-4500NO3 B	mg/L	50	≤50	9.43
38.	Nitrite (NO_2)	APHA-4500NO2 B	mg/L	3	≤3	1.23
39.	Arsenic (As)	APHA-3500As B	mg/L	0.01	≤0.05	N.D.
40.	Nickel (Ni)	ASTM E3047-16	mg/L	0.02	≤0.02	0.004
41.	Antimony (Sb)	APHA-3500Sb B	mg/L	0.005	<0.005	N.D.
42.	Chloride (Cl)	APHA-4500Cl- B	mg/L	250	<250	134
43.	Chlorine	APHA-4500 CL	mg/L		0.5-1.5	0.67
44.	Lead (Pb)	APHA-3500 Pb-B	mg/L	0.01	≤0.05	N.D.
45.	Fluoride	APHA-4500F- C	mg/L	1.5	≤1.5	1.7
46.	Aluminum	APHA-3500 Al	mg/L	≤ 0.2	≤0.2	N.D.
47.	Manganese (Mn)	APHA-3500 MN-B	mg/L	0.5	≤0.5	N.D.
48.	Cadmium (Cd)	APHA-3500 Cd-B	mg/L	0.003	0.01	N.D.
49.	Barium (Ba)	APHA-3500 Ba B	mg/L	0.3	0.7	0.7
50.	Mercury (Hg)	APHA-3500 Hg-B	mg/L	0.001	≤0.001	N.D.
51.	Copper (Cu)	APHA- 3500 Cu-B	mg/L	2	2	1.12
52.	Zinc (Zn)	APHA- 3500 Zn B	mg/L	3	5	1.23
53.	Boron (B)	APHA 4500 B- C	mg/L	0.3	0.3	N.D.
54.	Chromium (Cr)	APHA 3500 cr B	mg/L	0.05	≤0.05	N.D.
55.	Selenium (Se)	APHA- 3500 Se C	mg/L	0.01	0.01	N.D.
56.	Cyanide (CN)	APHA 4500-CN	mg/L	0.07	≤0.05	N.D.
57.	E-Coli	APHA:9222 D	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0
58.	Total Coliform	APHA:9222 B	Number/100 mL	Must not be detectable in any 100 ml sample	0 Number/100 mL	0

NDWQS National Drinking Water Quality Standards WHO World Health Organizat...
N D Not Detected

Signature of Analyst:

Signature of Chief Chemist

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Surface Water Monitoring Results (Fourth Quarter, 2025)

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SURFACE WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Dam Site (Paras Valley)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates**	Kunhar River 34.660247, 73.451592	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No	Parameters	Analysis Method	Units	NEQS	Results
1)	Temperature	-----	°C	40	16
2)	pH	APHA-4500H+ B	--	6-9	7.5
3)	Chemical Oxygen Demand (COD)	APHA-5220-D	mg/l	150	100.8
4)	Biological Oxygen Demand (BOD5) at 20 °C	APHA, 5210	mg/l	80	43.44
5)	Total Dissolved Solids (TDS)	APHA-2540 C	mg/l	3500	527
6)	Total Suspended Solids (TSS)	APHA-2540 D	mg/l	200	135
7)	Total Hardness	APHA-2340 C	mg/l	--	115
8)	Oil & Grease	Separation Method	mg/l	10	2.34
9)	Chromium (Hexa & Trivalent)	APHA-3500Cr B	mg/l	1.0	0.33
10)	Total Iron	APHA-3500-Fe-B	mg/l	8.0	1.35
11)	Chloride	APHA-4500Cl- B	mg/l	1000	239
12)	Flouride	APHA-4500F- C	mg/l	10	2.63
13)	Ammonia	ASTM-D1426-15	mg/l	40	17.19
14)	Cadmium	APHA-3500 Cd-B	mg/l	0.1	0
15)	Lead	APHA-3500-Pb B	mg/l	0.5	N.D
16)	Arsenic	APHA-3500As B	mg/l	1.0	N.D
17)	Copper	APHA-3500Cu B	mg/l	1.0	N.D
18)	Barium	APHA-3500Ba B	mg/l	1.5	0.25
19)	Selenium	APHA- 3500 Se C	mg/l	0.5	N.D
20)	Silver	APHA-3500Ag-B	mg/l	1.0	N.D
21)	Manganese	APHA-3500-Mn B	mg/l	1.5	0.6
22)	Zinc	APHA-3500-Zn B	mg/l	5.0	1.69
23)	Nickel	ASTM E3047-16	mg/l	1.0	0.8
24)	Boron	APHA-4500B-C	mg/l	6.0	N.D
25)	Mercury	APHA-3500 Hg-B	mg/l	0.01	N.D
26)	Sulphide (S^{-2})	APHA-4500 S_2	mg/l	1.0	0.69
27)	Sulphate (SO_4)	APHA-4500-SO_4 C	mg/l	600	402
28)	An Ionic Detergent (as MBAS)	----	mg/l	20	11.33
29)	Phenolic Compound (as Phenol)	APHA-5530-D	mg/l	0.1	0.02
30)	Cyanide (as CN) total	APHA 4500-CN	mg/l	1.0	N.D
31)	E-Coli	APHA:9222 D	Number/100 mL	---	Uncountable
32)	Total Coliform	APHA:9222 B	Number/100 mL	---	Uncountable

NEQS: National Environmental Quality Standards for Liquid Effluents **N.D:** Not Detected

Signature of Analyst:

Signature of Chief Chemist

Integrated Environment Laboratory

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SURFACE WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Tailrace Upstream (Barkot)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates**	Kunhar River 34.5971541, 73.3700751	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No	Parameters	Analysis Method	Units	NEQS	Results
1)	Temperature	-----	°C	40	18
2)	pH	APHA-4500H+ B	--	6-9	7.7
3)	Chemical Oxygen Demand (COD)	APHA-5220-D	mg/l	150	110.3
4)	Biological Oxygen Demand (BOD5) at 20 °C	APHA, 5210	mg/l	80	47.53
5)	Total Dissolved Solids (TDS)	APHA-2540 C	mg/l	3500	438
6)	Total Suspended Solids (TSS)	APHA-2540 D	mg/l	200	146
7)	Total Hardness	APHA-2340 C	mg/l	--	121
8)	Oil & Grease	Separation Method	mg/l	10	2.45
9)	Chromium (Hexa & Trivalent)	APHA-3500Cr B	mg/l	1.0	0.38
10)	Total Iron	APHA-3500-Fe-B	mg/l	8.0	1.43
11)	Chloride	APHA-4500Cl- B	mg/l	1000	251
12)	Flouride	APHA-4500F- C	mg/l	10	2.72
13)	Ammonia	ASTM-D1426-15	mg/l	40	17.25
14)	Cadmium	APHA-3500 Cd-B	mg/l	0.1	0
15)	Lead	APHA-3500-Pb B	mg/l	0.5	N.D
16)	Arsenic	APHA-3500As B	mg/l	1.0	N.D
17)	Copper	APHA-3500Cu B	mg/l	1.0	N.D
18)	Barium	APHA-3500Ba B	mg/l	1.5	0.31
19)	Selenium	APHA- 3500 Se C	mg/l	0.5	N.D
20)	Silver	APHA-3500Ag-B	mg/l	1.0	N.D
21)	Manganese	APHA-3500-Mn B	mg/l	1.5	0.7
22)	Zinc	APHA-3500-Zn B	mg/l	5.0	1.72
23)	Nickel	ASTM E3047-16	mg/l	1.0	0.9
24)	Boron	APHA-4500B-C	mg/l	6.0	N.D
25)	Mercury	APHA-3500 Hg-B	mg/l	0.01	N.D
26)	Sulphide (S^{-2})	APHA-4500 S_2	mg/l	1.0	0.54
27)	Sulphate (SO_4)	APHA-4500-SO_4 C	mg/l	600	412
28)	An Ionic Detergent (as MBAS)	----	mg/l	20	10.43
29)	Phenolic Compound (as Phenol)	APHA-5530-D	mg/l	0.1	0.0
30)	Cyanide (as CN) total	APHA 4500-CN	mg/l	1.0	N.D
31)	E-Coli	APHA:9222 D	Number/100 mL	—	Uncountable
32)	Total Coliform	APHA:9222 B	Number/100 mL	---	Uncountable

NEQS: National Environmental Quality Standards for Liquid Effluents **N.D:** Not Detected

Signature of Analyst: *Signature of Chief Chemist*

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SURFACE WATER ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location:**	Colony Area (Sanghar)
Sampling Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source: **GPS Coordinates**	Kunhar River 34.586503, 73.363695	**Analysis Method**	APHA/USEPA Standard Methods

Sr. No	Parameters	Analysis Method	Units	NEQS	Results
1)	Temperature	-----	°C	40	19
2)	pH	APHA-4500H+ B	--	6-9	7.8
3)	Chemical Oxygen Demand (COD)	APHA-5220-D	mg/l	150	125.2
4)	Biological Oxygen Demand (BOD5) at 20 °C	APHA, 5210	mg/l	80	48.42
5)	Total Dissolved Solids (TDS)	APHA-2540 C	mg/l	3500	1147
6)	Total Suspended Solids (TSS)	APHA-2540 D	mg/l	200	158
7)	Total Hardness	APHA-2340 C	mg/l	--	135
8)	Oil & Grease	Separation Method	mg/l	10	2.57
9)	Chromium (Hexa & Trivalent)	APHA-3500Cr B	mg/l	1.0	0.45
10)	Total Iron	APHA-3500-Fe-B	mg/l	8.0	1.53
11)	Chloride	APHA-4500Cl- B	mg/l	1000	262
12)	Flouride	APHA-4500F- C	mg/l	10	2.65
13)	Ammonia	ASTM-D1426-15	mg/l	40	18.35
14)	Cadmium	APHA-3500 Cd-B	mg/l	0.1	0
15)	Lead	APHA-3500-Pb B	mg/l	0.5	N.D
16)	Arsenic	APHA-3500As B	mg/l	1.0	N.D
17)	Copper	APHA-3500Cu B	mg/l	1.0	N.D
18)	Barium	APHA-3500Ba B	mg/l	1.5	0.42
19)	Selenium	APHA- 3500 Se C	mg/l	0.5	N.D
20)	Silver	APHA-3500Ag-B	mg/l	1.0	N.D
21)	Manganese	APHA-3500-Mn B	mg/l	1.5	0.9
22)	Zinc	APHA-3500-Zn B	mg/l	5.0	1.87
23)	Nickel	ASTM E3047-16	mg/l	1.0	0.8
24)	Boron	APHA-4500B-C	mg/l	6.0	N.D
25)	Mercury	APHA-3500 Hg-B	mg/l	0.01	N.D
26)	Sulphide (S^{-2})	APHA-4500 S_2	mg/l	1.0	0.64
27)	Sulphate (SO_4)	APHA-4500-SO_4 C	mg/l	600	443
28)	An Ionic Detergent (as MBAS)	----	mg/l	20	11.32
29)	Phenolic Compound (as Phenol)	APHA-5530-D	mg/l	0.1	0.0
30)	Cyanide (as CN) total	APHA 4500-CN	mg/l	1.0	N.D
31)	E-Coli	APHA:9222 D	Number/100 mL	---	Uncountable
32)	Total Coliform	APHA:9222 B	Number/100 mL	---	Uncountable

NEQS: National Environmental Quality Standards for Liquid Effluents **N.D:** Not Detected

Signature of Analyst *Signature of Chief Chemist*

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Soil Analysis Results (Fourth Quarter, 2025)

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SOIL ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location :**	Adit-1 (Thobi)
Monitoring Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source:	Soil Sample		

Sr. No.	Parameters		Results
1	Soil Texture	Sand %	19
		Silt%	53
		Clay %	23
		Texture Class	Silty Clay Loam
2	pH		7.7
3	Electrical Conductivity EC (μSm^{-1})		209
4	Phosphorus ($mgkg^{-1}$)		4.40
5	Sodium Absorption Ratio		2.04

μSm^{-1}: Micro siemens/meter
$mgkg^{-1}$: milligram per Kilogram

Signature of Analyst

Signature of Chief Chemist

Integrated Environment Laboratory

FOR ENVIRONMENTAL MONITORING, ANALYSIS & SURVEYS

Head Office: 218 Upper Mall Scheme, Lahore, Pakistan Tel: +92 42 37897273

Peshawar Office: Abshar Colony, Warsak Road, Peshawar, Pakistan

Tel: +92 91 5202323 Cell: +92 321 4536325 Email: inenvconsultants@yahoo.com www. iec-consultants.com

Environmental Protection Agency (EPA-KPK) Certified

Integrated Environment Laboratory

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SOIL ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location :**	Adit-2 (Ghanol)
Monitoring Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source:	Soil Sample		

Sr. No.	Parameters		Results
1	Soil Texture	Sand %	22
		Silt%	55
		Clay %	23
		Texture Class	Silty Clay Loam
2	pH		7.9
3	Electrical Conductivity EC (μSm^{-1})		208
4	Phosphorus ($mgkg^{-1}$)		3.38
5	Sodium Absorption Ratio		1.45

μSm^{-1}: micro siemens/meter
$mgkg^{-1}$: milligram per Kilogram

Signature of Analyst: *Signature of Chief Chemist*

Integrated Environment Laboratory

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SOIL ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location :**	Adit-3 (Kholian)
Monitoring Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source:	Soil Sample		

Sr. No.	Parameters		Results
1	Soil Texture	Sand %	30
		Silt%	46
		Clay %	24
		Texture Class	Silty Clay Loam
2	pH		7.7
3	Electrical Conductivity EC (μSm^{-1})		220
4	Phosphorus ($mgkg^{-1}$)		5.37
5	Sodium Absorption Ratio		4.19

μSm^{-1}: micro siemens/meter
$mgkg^{-1}$: milligram per Kilogram

Signature of Analyst:

Signature of Chief Chemist

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SOIL ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location :**	Powerhouse (Barkot)
Monitoring Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source:	Soil Sample		

Sr. No.	Parameters		Results
1	Soil Texture	Sand %	25
		Silt%	61
		Clay %	26
		Texture Class	Silty Clay Loam
2	pH		7.3
3	Electrical Conductivity EC (μSm^{-1})		241
4	Phosphorus ($mgkg^{-1}$)		2.31
5	Sodium Absorption Ratio		5.76

μSm^{-1}: micro siemens/meter
$mgkg^{-1}$: milligram per Kilogram

Signature of Analyst:

Signature of Chief Chemist

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SOIL ANALYSIS REPORT

Reference Number	BHPP/ENV/01-2026	**Client Name**	CGGC JV GRC
Project Name:	Balakot Hydropower Project (300 MW)	**Sampling Location :**	GRC Camp Office (Sanghar)
Monitoring Date:	25-12-2025	**Reporting Date:**	02-01-2026
Source:	Soil Sample		

Sr. No.	Parameters		Results
1	Soil Texture	Sand %	31
		Silt%	44
		Clay %	25
		Texture Class	Silty Clay Loam
2	pH		7.5
3	Electrical Conductivity EC (μSm^{-1})		227
4	Phosphorus ($mgkg^{-1}$)		4.06
5	Sodium Absorption Ratio		2.45

μSm^{-1}: Micro siemens/meter
$mgkg^{-1}$: milligram per Kilogram

Signature of Analyst:

Signature of Chief Chemist

Integrated Environment Laboratory

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Appendix 3: Incidents Record of the EPC Contractor (July-December 2025)

Incidents Record of the EPC Contractor (July- December 2025)

S/No	Accident/Incident No	Accident/Incident Date	Shift (Day/ night)	Accident/ Incident Time	Location	Accident/Incident Details	Injury Details	Current Status
1.	IANR-71	01/07/2025	Day	2:05 PM	Damsite Batching Plant	The EPC Contractor's worker was engaged in cleaning the concrete chute of his mixer truck beneath the water pump after completing his work. During the process, as he attempted to reposition the chute to the opposite side, it unexpectedly detached from the main discharge hopper and fell onto him. The impact caused the worker to lose his balance and fall, striking the edge of a nearby drain. As a result, he sustained an internal injury to his right leg.	Blunt trauma to his right thigh	Resumed Duty
2.	IANR-72	02/07/2025	Night	10:40 PM	Left abutment Damsite	The worker was engaged in a drilling operation on the N-15 slope, left bank. While attempting to open the rod of the drilling machine, his left foot slipped and became entrapped in the machine's key. As a result, his shoe was severely damaged, and he sustained a deep cut to the soft tissue of the left foot toe.	Deep cut in the soft tissues of the left foot toe	Resumed Duty
3.	IANR-73	09/07/2025	Day	1:10 PM	Left abutment Damsite	The EPC Contractor's worker was engaged in a drilling operation at the N-15 slope, on the left bank of Damsite. After some time, he proceeded to check the water level in the radiator of the drilling machine. While attempting to open the radiator pipe, hot water suddenly splashed onto his left wrist, resulting in a second-degree burn.	Second-degree burn on the left wrist	Resumed Duty
4.	IANR-74	25/07/2025	Night	8:55 PM	Main Access tunnel (P.H)	The site worker was engaged in routine work activities inside the main access tunnel of the powerhouse. During the course of work, a stone suddenly dislodged from the tunnel wall and struck him on the head, causing injury.	Head injury and minor laceration to the left leg	Resumed Duty
5.	IANR-75	25/07/2025	Day	09:20 AM	Damsite Diversion Tunnel	The site labor was transporting steel from a location near the portal of the diversion tunnel inlet. At that moment, due to the movement of cattle on the uphill right slope from a nearby village, a stone became dislodged and rolled down, striking one of the site labor on his back. Following the impact, he attempted to escape the area but tripped and fell, sustaining an additional injury to his arm.	Multiple linear superficial abrasions over the right lateral lower back.	Resumed Duty
6.	IANR-76	26/07/2025	Day	6:50 PM	Damsite Diversion Tunnel	The site worker was performing overtime duty inside the diversion tunnel. Approximately 15 to 20 minutes before this time, he sustained an injury to his left leg after it became entangled in a steel wire mesh. However, he did not report the incident at the time and remained silent about the injury until today. Earlier today, he approached the safety personnel at the site and reported the matter. Upon examination, visible swelling was observed around the injured area. Immediate first aid was administered on-site by the safety team, after which he was referred to the main Camp dispensary for necessary first aid.	Laceration on the left leg	Resumed Duty

S/No	Accident/Incident No	Accident/Incident Date	Shift (Day/ night)	Accident/ Incident Time	Location	Accident/Incident Details	Injury Details	Current Status
7.	IANR-77	28/07/2025	Day	12:30 PM	Downstream surge tunnel (P.H)	On 28th July at approximately 12:30 PM, drilling for rock bolts had already been completed, and the grouting process was underway in the Downstream Surge Tunnel, Powerhouse. During this phase, one of the installed rock bolts became stuck. The driller attempted to remove the rock bolt using force. Unfortunately, during this process, the rock bolt suddenly slipped from his grip and hit him on the left side of his face. He was immediately taken to the company dispensary, where he was provided with necessary first aid.	facial Laceration on his left side	Resumed Duty
8.	IANR-78	30/07/2025	Night	12:58 AM	Damsite Diversion Tunnel	On July 30, 2025, at approximately 12:58 AM, a welding operation was in progress inside the diversion tunnel at the dam site. During this activity, a welder was struck on the forehead by a falling spacer stone from the tunnel crown. This impact resulted in the breakage of his safety helmet.	Minor forehead laceration	Resumed Duty
9.	IANR-79	03/08/2025	Day	10:45 AM	Downstream surge tunnel	The EPC Contractor's worker was transferring the dewatering motor. Meanwhile, the scaffolding pipe fell from above and hit him on his forehead, resulting in a minor laceration to his upper right forehead. He remained stable and conscious throughout this incident. The Injured person was promptly taken to the camp dispensary, where the physician immediately administered him first aid.	Minor laceration to his upper right forehead	Resumed Duty
10.	IANR-80	10/08/2025	Day	06:40 PM	Adit-3 Tunnel HRT US	The site labor, who was positioned on the working platform at the tunnel face, was operating a pneumatic drill machine at the time. During the operation, the labor lost his grip on the machine. As a result, the pneumatic drill slipped from his hands and struck him on the nose, causing a minor injury.	Nasal Injury	Resumed Duty
11.	IANR-81	13/08/2025	Night	03:00 AM	Powerhouse Workshop	The mobile crane operator slipped while stepping down from the crane during duty. Consequently, his foot twisted, resulting in a muscle sprain.	Soft tissue injury to the left foot	Resumed Duty
12.	IANR-82	26/08/2025	Day	11:15 AM	Downstream Adit-6 Tunnel (PH)	The drilling operator was using a pneumatic hammer drill when the steel rod of the equipment suddenly broke during operation. Due to this mechanical malfunction, the drill machine slipped from his hands and struck directly onto his right foot.	Soft tissue injury suspected fracture	Resumed Duty
13.	IANR-83	28/08/2025	Day	08:45 AM	Damsite Left Abutment	The site worker was engaged in the task and was using a hammer. He was holding the steel bar with one hand while striking it with the hammer in the other. During this activity, he accidentally hit the index finger of his right hand with the hammer, resulting in a deep laceration injury.	Laceration on the right-hand index finger	Resumed Duty
14.	IANR-84	28/08/2025	Day	02:50 PM	Near Main Access Tunnel (PH)	Company Dumper No. 09 was transporting muck material from the downstream surge tunnel to the material offloading area located on the front slope of the main access tunnel. As per the statement of the signalman deployed at the location, as the dumper approached the sloped section of the road near the main access tunnel, it came to a sudden stop, then began reversing	Unconscious, no apparent external injuries.	Resumed Duty

S/No	Accident/Incident No	Accident/Incident Date	Shift (Day/ night)	Accident/ Incident Time	Location	Accident/Incident Details	Injury Details	Current Status
						slowly before leaving the road alignment. The vehicle subsequently descended approximately 20 meters down the slope into the muck disposal zone. The driver was immediately rescued from the vehicle in a conscious state, with no visible external injury		
15.	IANR-85	28/08/2025	Night	8:30 PM	Dam Diversion Tunnel	The EPC Contractor's site worker was transporting cement bags inside the diversion tunnel. While walking near the tunnel inlet, his foot slipped unexpectedly on uneven ground, causing him to fall into a nearby pit. During the fall, the cement bags, he was carrying toppled from above and landed on him, resulting in minor abrasions to his chest and head.	Minor abrasion on the face and chest	Resumed Duty
16.	IANR-86	02/09/2025	Day	3:50 PM	Main Access Tunnel (PH)	The driller was busy in the drilling work on the first-floor platform when his foot slipped, causing the drilling machine to fall from his hands. The machine dropped to the ground floor, bounced upon impact, and struck another worker, drilling on the ground floor.	Minor trauma	Resumed Duty
17.	IANR-87	23/9/2025	Day	2:41 PM	Downstream Surge Tunnel	The site labor was engaged in cleaning the remaining concrete using a water hose. During this process, his hand became entangled in the rotating mixer shaft of the feeding hopper.	Severe injury to the right forearm (surgical).	Under treatment
18.	IANR-88	3/10/2025	Day	11:25A M	Downstream Surge Tunnel	A driller accidentally stepped on a loose steel wire lying on the work platform. The wire pierced the sole of his rubber shoe, resulting in a puncture wound to his left foot.	Puncture wound on the left foot	Resumed Duty
19.	IANR-89	9/10/2025	Day	3:40 PM	Main Access Tunnel	During operations, the high-voltage line on the tower was unexpectedly re-energized, resulting in an electric shock to the worker. The worker was properly wearing PPE at the time.	Electric shock	Under treatment
20.	IANR-90	19/10/2025	Day	10:50 AM	Dam Site (Right Bank)	A worker was engaged in charging explosives on an isolated rock at the right bank upstream of Bailey Bridge No. 2. During this activity, he accidentally slipped and fell from the rock.	Sustained minor abrasions on the left leg, right hand, and chest	Resumed Duty
21.	IANR-91	26/10/2025	Day	1:50 PM	Downstream (Adit A5 tunnel)	A driller was standing below the working platform when a drilling rod accidentally fell from above and struck directly on his helmet.	Minor head injury with no visible external wounds	Resumed Duty
22.	IANR-92	6/11/2025	Night	9:15 PM	Upstream Surge Shaft Tunnel	A loose rock struck the site worker, causing a minor scalp injury. He was given first aid at the Powerhouse Camp Dispensary and referred to Mansehra Medical Complex for further evaluation.	A minor scalp injury above his left ear	Resumed Duty
23.	IANR-93	13/11/2025	Day	2:30 PM	Dam Site Crushing Plant	A carpenter was constructing a wall when a stone accidentally slipped from his hand and struck his left foot. The injured worker was immediately transported to the main camp dispensary, where he received first aid treatment.	Blunt trauma to his left foot	Under treatment

S/No	Accident/Incident No	Accident/Incident Date	Shift (Day/ night)	Accident/ Incident Time	Location	Accident/Incident Details	Injury Details	Current Status
24.	IANR-94	23/11/2025	Day	10:20 AM	Dam Site Mechanical Workshop	A Motor Coil Winder sustained an eye injury while opening a water pump due to acid and gas buildup from rust. He received first aid at the Main Camp Dispensary, was referred to Tehsil Balakot Hospital, and later transferred to Islamabad. His condition is stable, with a follow-up advised.	Left eye injury due to acid splash	Under treatment
25.	IANR-95	25/11/2025	Day	10:30 AM	Adit-2 Tunnel Downstream	At around 10:45 AM, during the installation process, the axial flow fan suddenly became unstable and fell to the ground. The on-site workers quickly retreated. Due to water accumulation and uneven ground inside the tunnel, a Chinese worker slipped and fell while retreating. At that moment, the fan rolled and struck his chest, abdomen, and the side of his head, causing him to lose consciousness immediately.	Critical injuries resulted in death.	Deceased
26.	IANR-96	26/11/2025	Day	11:00 AM	left bank slope of the dam site	A Steel fixer was working at the site when he twisted his foot after stepping on a steel pipe lying on the ground. The injured person was immediately transferred to the main camp dispensary, where he received first aid treatment. He was advised to rest and instructed to return for a follow-up checkup.	Excessive eversion of the foot	Under treatment
27.	IANR-97	26/11/2025	Day	10:10 AM	Right Bank Slope Dam Site	A mason was engaged in breaking stones with a heavy hammer when a stone suddenly splintered into pieces, causing fragments to strike and injure his eyes. After receiving first aid at the main camp dispensary, the injured employee was promptly referred to Tehsil Balakot Hospital for further treatment.	Chemical injury to the eye	Under treatment

Appendix 4: Copies of the Initial Incident Reports

中国能建 ENERGY CHINA

Incident/Accident Report

Classification

LTI- Lost Time Injury, RWC- Restricted work case, MTC- Medical Treatment Case, OHI, Occupational Health Illness- First Aid Case, RTA- Road Traffic Accident

Fatality ☐	LTI ☐	RWC ☐	Environmental ☐	MTC ☑
OHI ☐	Near miss ☐	FAC ☐	Asset Damage ☐	RTA ☐

Date	November 26, 2025	Time	11:00 AM	Location	Left bank Slope Dam Site

Caused by:

Contractor ☑	Sub-contractor ☐	Third party ☐

Victim's Detail:

Name	----------	Age	-	Designation	Steel fixer
CNIC Number				Company Name	CGGC

Direct Supervisor's Detail:

Name	----------	Designation	Foreman	Mobile Number	----------

Witness Detail:

Name	----------	Designation	HSE Officer	Mobile Number	----------

Incident Summary (What and How)

On November 26, 2025, at around 11:00 a.m., ---------- was working at the left bank slope of the dam site when his foot twisted after stepping on a steel pipe lying on the ground. The injured person was immediately transferred to the main camp dispensary, where he received the necessary first aid treatment. He was advised to rest and instructed to return for a follow-up checkup.

Injury Detail:

Excessive eversion of foot

Present Status of the Victim (Sick leave/Hospitalized/Resumed duty etc.)

The injured person was advised rest and was return for a follow up checkup.

Reported by:
Ali Haider Shah

Signature with Date:
27th November,2025

Ali

中国能建 ENERGY CHINA

Incident/Accident Report

Classification

LTI- Lost Time Injury, RWC- Restricted work case, MTC- Medical Treatment Case, OHI, Occupational Health Illness, FAC- First Aid Case, RTA- Road Traffic Accident

Fatality ☐	LTI ☐	RWC ☐	Environmental ☐	MTC ☐	
OHI ☐	Near miss ☐	FAC ☑	Asset Damage ☐	RTA ☐	
Date	13th August 2025	Time	03:00 AM	Location	Powerhouse workshop

Caused by:

Contractor ☑	Sub-contractor ☐	Third party ☐

Victim's Detail:

Name	----------	Age	30	Designation	Mobile crane operator
CNIC Number	----------			Company Name	CGGC Powerhouse

Direct Supervisor's Detail:

Name	----------	Designation	----------	Mobile Number	----------

Witness Detail:

Name	Syed Adnan Shah	Designation	HSE Officer	Mobile Number	0310-5479434

Incident Summary (What and How)

On August 13, 2025, at 03:00 AM, ---------- working as a mobile crane operator, slipped while stepping down from the crane during duty. Consequently, his f ---------- lting in a muscle sprain. Later that morning, ---------- informed the site safety personnel about the incident, mentioning that he was experiencing severe pain in his foot. HSE Officer Syed Hassan Shah observed the situation and officially reported it to the HSE department. Immediately afterward, ---------- was shifted to the camp dispensary for medical care. After providing the required first aid at the company dispensary, the doctor referred him to THQ Hospital Balakot for further assessment. Upon arrival at THQ Hospital Balakot, the attending doctor performed an X-ray of his foot. The X-ray findings confirmed that no bone or joint fracture was present, and the injury was confined to muscular tissue pain. Furthermore, ---------- has been advised to return for a follow-up checkup after 3:00 PM.

Injury Detail:

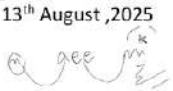
Soft tissue injury to the left foot

Present Status of the Victim (Sick leave/Hospitalized/Resumed duty etc.)

Rest

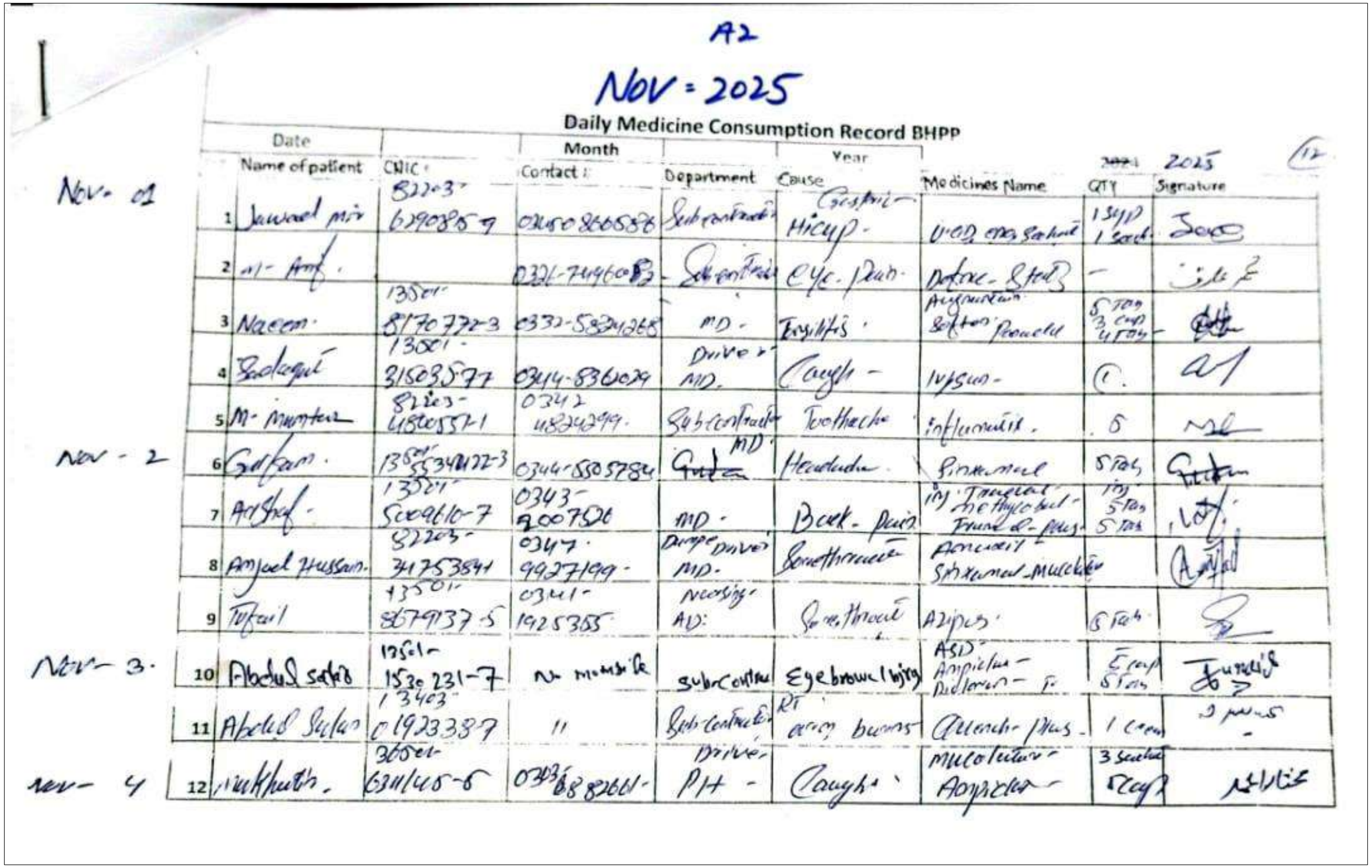
Reported by:
Naeem Yousaf Chughtai

Signature with Date:
13th August ,2025



Appendix 5: EPC Contractor’s Dispensary Record

The EPC Contractor's Daily Dispensary Record (November 2025)



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Nov = 2025

Daily Medicine Consumption Record BHPP

Date / Month / Year 2025

Date	No.	Name of patient	CNIC	Contact	Department	Cause	Medicines Name	QTY	Signature
Nov- 01	1	Jawad mir	82203-6290859	03450860586	Subcontractor	Gastric Hicup	[illegible]	1 syp 1 sachet	[illegible]
	2	M. Arif		0321-7496083	Subcontractor	Eye pain	Dextrose [illegible]	-	[illegible]
	3	Naeem	13501-8170772-3	0332-5824268	MD	Tonsillitis	Augmentin, Softon, Panadol	5 Tab 3 cap 4 Tab	[illegible]
	4	Sadaqat	13801-31503577	0344-8360029	Driver MD	Cough	Hydryllin	1	[illegible]
	5	M. Mumtaz	82203-4850557-1	0342 4824299	Subcontractor	Toothache	[illegible]	6	[illegible]
Nov - 2	6	Gulfam	13504-5534922-3	0344-5505784	Gulfam MD	Headache	Panadol	5 Tab	[illegible]
	7	Arshad	13501-5009610-7	0343-9007526	MD	Back pain	inj. Toradol, Methycobal, [illegible]	inj 5 Tab 5 Tab	[illegible]
	8	Amjad Hussain	82203-34753841	0347-9927199	Dumper Driver MD	Sore throat	Amoxil, [illegible]		[illegible]
	9	Tufail	13501-8679137-5	0341-1925355	Nursing AD	Sore throat	Azipus	6 Tab	[illegible]
Nov- 3	10	Abdul Sattar	13501-1530231-7	No mobile	Subcontractor	Eyebrow injury	ASD, Ampiclox, [illegible]	5 cap 5 Tab	[illegible]
	11	Abdul Sultan	13403-01923387	11	Subcontractor	RT arm burns	[illegible] plus	1 cream	[illegible]
nov- 4	12	Mukhtar	36501-6311405-6	0343 6882661	Driver PH	Cough	Mucolator, Ampiclox	3 sachet 5 cap	[illegible]

Appendix 6: Copies of the Annual OHS Training Participants List

BALAKOT HYDROPOWER PROJECT (300MW)

First Day of Annual Occupational Health & Safety (OHS) Training-2025

DOLSAR ENGINEERING | MES | BK | CE | TE | CEEC 中国能建 ENERGY CHINA | CGGC | 葛洲坝 & GRC联营体 CGGC & GRC JOINT VENTURE | GRC

Delivered by Rescue 1122, District Manschra

LIST OF PARTICIPANTS

December 16, 2025

Sr.#	Name of Participants	Designation	Department	Signature
1.	Muhammad Hussain	DTL	PMC	
2.	Assad Ali Khan	Environmental Expert	PMC	
3.	Shujat Ali	Foreman – Dam Site	Dam Site. L4&c.	
4.	Mohazzam	Safety A2	A2 CGGC	
5.	Rafaqat shah	Driver A2	A2 CGGC	
6.	Shabir Ahmed	Forman	Dam Site	
7.	S. Jalal Shah	Forman	Dam Site	
8.	Jandaz Khan	Forman	Power house	
9.	Rana Nabeel	Forman	Power House	
10.	Farhan Yaseen	Forman	Dam Site	
11.	Rafaqat Hussain	Forman	Dam Site	
12.	M: Ali: Shah	// FORMAN	A-3-	
13.	Saeed Ahmed	Forman	A 3- Site	
14.	M. Asharf	" "	A-3.	
15.	Hashir Abbasi	HSE officer	Crush Plant	
16.	M. faisal	formen	A+2	
17.	Syed Thair. Shah.	Forman	Dam Site	
18.	Syed M. Umair Shah	HSE officer	CGGC Office Main camp	
19.	Razwan	Safety		
20.	M. Bilal	Dispenser Dam camp	Nurse/Medical	

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BALAKOT HYDROPOWER PROJECT (300MW)

First Day of Annual Occupational Health & Safety (OHS) Training-2025

DOLSAR ENGINEERING | CGGC 中国能建 ENERGY CHINA | CGGC | 葛洲坝 & GRC 联营体 CGGC & GRC JOINT VENTURE | GRC

Delivered by Rescue 1122, District Mansehra

Sr.#	Name of Participants	Designation	Department	Signature
21.	Ijaz ul hay	Inspector U/G PMC	PMC	
22.	Umar Aziz	Junior Engineer	PMC	
23.	Arfal Khan	Inspector (D/S)	PMC	
24.	Bilal.	Junior Engineer	PMC	
25.	M. Umar	Junior Engineer	PMC	
26.	Irshad Saeed	Environmental Manager	CGGC	
27.	Mumtaz Hussain	Site Supervisor	CGGC	
28.	Shehzad Mussoorvi	AD - Civil	PEDO	
29.	Shahzad Ahmad	AD Electrical	PEDO	
30.	Syed Adnan Shah	AD Electrical	PEDO	
31.	Samiullah khan	AD Mechanical	PEDO	
32.	Mehmood ul hassan	Safety officer P-H	HSE - P.H	
33.	Shahzad Ali Shah	HSE Officer		
34.	Ali haider	HSE officer	QHSE	
35.				
36.				
37.				
38.				
39.				
40.				
41.				

2/2